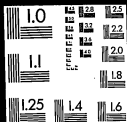


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Thomas A Edison Papers

A SELECTIVE MICROFILM EDITION PART V (1911-1919)

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The original documents in this edition are from the archives at the Edison National Historic Site at West Orange, New Jersey.

ISBN 978-0-88692-887-2

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We thankfully acknowledge the vision and support of Rutgers University and the Thomas A. Edison Papers Board of Sponsors.

This edition was made possible by grant funds provided from the New Jersey Historical Commission, National Historical Publications and Records Commission, and The National Endowment for the Humanities. Major underwriting has been provided by the Barkley Fund, through the National Trust for the Humanities, and by The Charles Edison Foundation.

We are grateful for the generous support of the IEEE Foundation, the Hyde & Watson Foundation, the Martinson Family Foundation, and the GE Foundation. We acknowledge gifts from many other individuals, as well as an anonymous donor; the Association of Edison Illuminating Companies; and the Edison Electric Institute. For the assistance of all these organizations and individuals, as well as for the indispensable aid of archivists, librarians, scholars, and collectors, the editors are most grateful.

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**PATENT SERIES
PATENT APPLICATION FOLIOS**

**Patent Series
Patent Application Folios (1911-1931)**

These folios contain formal patent applications, related legal documents, and correspondence between Edison's attorneys and the U.S. Patent Office. Most of the folios also contain additional items such as notes and drawings by Edison; draft specifications in Edison's hand and other specifications with his notations; patent attorneys' notes and memoranda; communications between Edison and his attorneys; and related correspondence authored by or sent to Edison, his associates, and his companies. Typically, the applications were revised by Edison's lawyers several times over a period of years in response to the Patent Examiner's findings. Some were eventually abandoned because they were ultimately deemed unpatentable. Others were approved by the Patent Office but never became issued patents because Edison declined to pay the final fees, having exhausted the strategic value of letting the application "soak" for several years in the Patent Office to keep the ideas away from his competitors.

During the period 1911-1931 Edison executed 113 successful patent applications relating to primary and storage batteries, business and musical phonographs, disc and cylinder records, the kinetophone (a phonograph and motion picture projector combination), cement, and other subjects. Many of the applications pertain to the Diamond Disc phonograph, which Edison introduced toward the end of 1912. An outline of eighteen patents that he planned to pursue in support of his new phonograph can be found at the beginning of Folio 906. Other technologies for which Edison sought patents, not always successfully, include the use of paraphenylenediamine as condensing agent for shellac (to make phonograph records); chemical processing methods for storage battery components and other products; concrete furniture and other concrete products; projectiles (related to his research for the U.S. Navy during World War I); phonograph reproducers; and automobile electrical systems. Among the thirty-seven patents that he received during the last decade of his life (four others were issued posthumously) are two for rubber processing and one for a radio or telephone receiver based on osmotic action, dubbed the "osmophone" (folio 1231).

Digital images of all of Edison's issued patents can be found on the Thomas A. Edison Papers (TAEP) website. In addition, images of these and other inventors' issued patents, along with a searchable database, are

available on the U.S. Patent Office website. A nearly complete set of application files for Edison's U.S. patents can be found in the National Archives (Record Group 241, Records of the Patent Office). Because the formal specifications and Patent Office correspondence in the case files at the National Archives are already available on microfilm, identical material in the case files at the Edison National Historic Site has not been selected. Also not selected are the folios for the numerous patents that Edison received in countries other than the United States. No complete list exists, but the 1910 biography, *Edison: His Life and Inventions* by Frank L. Dyer and Thomas Commerford Martin, contains a compilation of 1,239 non-U.S. patents awarded in thirty-four countries. This list is also available on the TAEP website.

For Edison's successful applications, the selected material consists primarily of notes, drawings, and draft specifications in his hand, along with communications between Edison and his attorneys, including at various times Frank L. Dyer, Delos Holden, Henry Lanahan, and William A. Hardy. The case files for Edison's abandoned applications have been selected in their entirety except for duplicates, printed patents by Edison and other inventors, other printed material, and routine memoranda by Edison's attorneys. It should be noted that most of the folios contain copies of patents by other inventors that were cited by the Examiner as justification for rejecting the claims in Edison's applications.

In addition to Edison's own patents, these folios include applications by members of his laboratory staff, mainly for improvements in products such as the storage battery and the phonograph. These applications were also handled by Edison's patent attorneys. Documents from these folders have been selected only where they show Edison's personal involvement in the inventing or patenting processes. Folios with selected material include applications by Jonas W. Aylsworth (chemical compounds for phonograph records), Daniel Higham (kinetophone), and Miller Reese Hutchison (storage batteries). Several applications by Thomas A. Edison, Jr., pertaining to internal combustion engines have also been selected, along with another for a vending machine with a phonograph inside it.

The folios are arranged in chronological order according to execution date—the date on which the formal application was signed and witnessed. For Edison's successful applications, the selected documents within each folio appear in chronological order. For his abandoned applications, the

specifications, Patent Office correspondence, and other official documents appear in the order they are listed on the folio wrapper, followed by the other selected documents in chronological order.

On the list that follows, each selected folio appears with its execution date; folio number; patent number (for issued patents) or serial number (for abandoned applications); name of the primary applicant; and an abbreviated version of the patent title as it was issued (or, in the case of abandoned files, as found on the folio wrapper). Where the execution date is not available, the date of filing (which generally occurred a few days after execution) is supplied in brackets.

It should be noted that this is not a comprehensive list of Edison's patents for the period 1911-1931, since folios consisting entirely of unselected material do not appear. A complete list of Edison's 1,093 successful U.S. patents can be found on the TAEF website.

Exec. Date	Folio #	Ser. or Pat. #	Primary Applicant	Abbreviated Case File Title
1/3/1911	681	Ser. 600761	Edison, Thomas A	Sound Reproducers
1/3/1911	682	Ser. 600762	Edison, Thomas A	Sound Reproducers
1/25/1911	688	Pat. 1034002	Edison, Thomas A	Storage Battery
1/25/1911	691	Pat. 1083354	Edison, Thomas A	Insulating Compound
1/25/1911	682	Pat. 1002505	Edison, Thomas A	Composition for Sound-Records
2/15/1911	698	Pat. 1187146	Holland, Newman H	Sound-Box for Phonograph
2/15/1911	700	Ser. 009099	Edison, Thomas A	Talking Machines (Case A)
3/10/1911	715	Pat. 1214983	Bliss, Donald M	Alternating Current Motor
3/22/1911	719	Pat. 1204420	Edison, Thomas A	Sound-Box
3/22/1911	720	Ser. 616756	Edison, Thomas A	Sound Boxes
3/22/1911	721	Ser. 616757	Edison, Thomas A	Phonographic Telegraphs
3/28/1911	722	Ser. 616764	Edison, Thomas A	Talking Machines (Case A)
3/28/1911	723	Ser. 616765	Edison, Thomas A	Talking Machines (Case B)
4/3/1911	728	Pat. 1078286	Edison, Thomas A	Sound-Box
4/7/1911	731	Pat. 1167484	Edison, Thomas A	Production of Nickel Hydroxide
4/7/1911	732	Pat. 1083356	Edison, Thomas A	Storage Battery
4/7/1911	733	Pat. 1083355	Edison, Thomas A	Forming Chemical Compounds
5/1/1911	743	Pat. 1050629	Edison, Thomas A	Separating Copper from Other Metals
5/12/1911	745	Pat. 1050630	Edison, Thomas A	Separating Copper from Other Metals
5/18/1911	748	Pat. 1055621	Edison, Thomas A	Reproducer
6/6/1911	756	Pat. 1045291	Holland, Walter E	Battery Charge Indication
6/8/1911	755	Pat. 1118114	Edison, Thomas A	Making Molds for Sound Records
6/15/1911	757	Pat. 1165100	Holland, Walter E	Valve for Storage Batteries
6/19/1911	759	Pat. 1116893	Hutchinson, Miller R	Safety Device for Secondary Cells
7/18/1911	768	Ser. 639752	Edison, Thomas A	Concrete Furniture

Exec. Date	Folio #	Ser. or Pat. #	Primary Applicant	Abbreviated Case File Title
7/19/1911	767	Ser. 639716	Moore, Sherwood T	Phonographs
7/24/1911	770	Pat. 1016875	Edison, Thomas A	Electroplating Apparatus
8/1/1911	772	Ser. 642072	Edison, Thomas A	Storage Battery Motor Sets
8/1/1911	773	Ser. 642377	Edison, Thomas A	Sound Records and Making Same
[8/24/1911]	777	Ser. 645838	Kiefer, Herman E	Manufacture of Fertilizing Material
9/26/1911	785	Ser. 651697	Hutchison, Miller R	Charging Secondary Cells
10/9/1911	794	Pat. 1204424	Gall, Adolph F	Kinotoscope
10/16/1911	801	Ser. 655902	Edison, Thomas A	Cement Kins
11/29/1911	806	Pat. 1067985	Moore, Sherwood T	Forming Sound-Record Molds
12/12/1911	813	Pat. 1221981	Edison, Thomas A	Alternating-Current Rectifier
12/19/1911	810	Pat. 1146413	Edison, Thomas A	Producing Tablets for Sound-Records
12/20/1911	812	Pat. 1275232	Edison, Thomas A	Production of Finely-Divided Metals
1/20/1912	818	Pat. 1073107	Edison, Thomas A	Storage Battery
1/2/1912	814	Ser. 669868	Edison, Thomas A	Method of Recording Sounds
1/2/1912	815	Pat. 1099349	Edison, Thomas A	Method of Making Sound-Record Molds
1/12/1912	819	Pat. 1143818	Edison, Thomas A	Charging Storage Batteries
1/19/1912	820	Pat. 1111999	Edison, Thomas A	Phonograph-Record
1/24/1912	821	Ser. 674274	Edison, Thomas A	Concrete Furniture
2/15/1912	825	Pat. 1160133	Edison, Thomas A	Means for Reducing Sounds
2/23/1912	826	Ser. 679744	Edison, Thomas A	Coatings for Storage Battery Containers
2/28/1912	828	Ser. 681101	Edison, Thomas A	Storage Battery Systems
3/8/1912	829	Ser. 685206	Edison, Thomas A	Electrical Regulation
3/8/1912	831	Ser. 685542	Edison, Thomas A	Motor Vehicles
4/1/1912	833	Ser. 687967	Higham, Daniel	[Talking Pictures]
4/23/1912	845	Pat. 1167485	Edison, Thomas A	Storage Battery
4/30/1912	846	Ser. 694658	Edison, Thomas A	Record Tablet Molds
5/20/1912	852	Pat. 1192400	Edison, Thomas A	Electrical System for Automobiles
5/21/1912	853	Pat. 1167636	Edison, Thomas A	Means for Concentrating Cires
6/14/1912	861	Ser. 704338	Langley, Sam G	Charging Storage Batteries
6/17/1912	860	Pat. 1282011	Aylsworth, Jonas W	Production of Sound-Records
6/19/1912	866	Pat. 1266778	Edison, Thomas A	Making Screens for Projection
7/15/1912	870	Ser. 710150	Edison, Thomas A	Disc Sound Records
7/15/1912	871	Ser. 710151	Edison, Thomas A	Phonograph Recorders
7/22/1912	872	Pat. 1160585	Edison, T A, Jr	Internal Combustion Engines
7/27/1912	876	Pat. 1255517	Edison, Thomas A	Starting System for Automobiles
8/9/1912	879	Pat. 1184334	Edison, Thomas A	Phonograph or Talking-Machine
8/21/1912	888	Ser. 719639	Edison, Thomas A	Phonographs or Talking Machines
10/24/1912	903	Ser. 728370	Edison, Thomas A	Illusion of Scenes in Colors
11/7/1912	905	Ser. 730343	Edison, Thomas A	Coating Phonograph Records
11/19/1912	906	Ser. 732410	Edison, Thomas A	Formation of Sound Records
2/28/1913	915	Pat. 1286259	Edison, Thomas A	Means for Recording Sounds
2/28/1913	916	Ser. 752276	Edison, Thomas A	Phonographs or Talking Machines
3/27/1913	917	Ser. 757502	Higham, Daniel	[Talking Pictures]
4/10/1913	918	Ser. 760524	Edison, Thomas A	Molds
7/22/1913	939	Pat. 1182894	Chesler, Jerry	Alternating Current Rectifier

Exec. Date	Folio #	Ser. or Pat. #	Primary Applicant	Abbreviated Case File Title
9/3/1913	943	Pat. 1086727	Palmer, Harry B	Toy Guns
11/21/1913	952	Pat. 1290138	Edison, Thomas A	Friction-Speed Governor
1/28/1914	984	Ser. 817976	Edison, Thomas A	Methods and Means for Treating Ores
1/31/1914	980	Ser. 815946	Hutchison, Miller R	Storage Batteries
2/3/1914	981	Ser. 816887	Edison, Thomas A	Sound Records
2/11/1914	985	Ser. 819301	Edison, T A, Jr	Internal Combustion Engine
2/20/1914	971	Pat. 1162800	Nehr, William F	Phonographic Molding Apparatus
3/26/1914	975	Pat. 1130077	Hutchison, Miller R	Safety Device
4/21/1914	981	Pat. 1201449	Edison, Thomas A	Sound-Modifying Device
4/28/1914	983	Ser. 835608	Edison, Thomas A	Production of Molded Articles
5/09/1914	985	Ser. 837706	Nehr, William F	Improvement in Molding Apparatus
5/22/1914	987	Pat. 1283779	Hutchison, Miller R	Storage Battery
5/28/1914	988	Pat. 1290254	Lewis, Frank D	Catch
7/10/1914	990	Pat. 1297466	Holland, Newman H	Speaking-Tube Support
7/10/1914	991	Pat. 1176014	Holland, Newman H	Phonograph
7/24/1914	993	Ser. 853283	Edison, Thomas A	Phonographs
8/6/1914	997	Pat. 1299693	Edison, Thomas A	Storage Battery
9/14/1914	1009	Pat. 1229749	Holland, Newman H	Phonograph
10/9/1914	1012	Pat. 1326330	Edison, Thomas A	Mold for Sound-Records
10/13/1914	1013	Pat. 1286779	Edison, Thomas A	Electric Safety-Lantern
8/21/1915	1030	Pat. 1342326	Edison, Thomas A	Matter for Sound-Records
1/11/1916	1038	Pat. 1297294	Edison, Thomas A	Projectile
1/12/1916	1037	Pat. 1323218	Edison, Thomas A	Rendition of Musical Compositions
2/4/1916	1041	Pat. 1300709	Edison, Thomas A	Projectile (Case A)
2/5/1916	1042	Pat. 1300708	Edison, Thomas A	Projectile (Case B)
5/18/1916	1045	Ser. 99281	Edison, Thomas A	Production of Potassium Chloride
9/21/1916	1048	Pat. 1283706	Edison, Thomas A	Para-Phenylene-Di-Amin Substances
9/28/1916	1049	Ser. 1234460	Edison, Thomas A	Molds
[12/1/1916]	1053	Ser. 134386	Edison, T A, Jr	Internal Combustion Engines
1/16/1917	1058	Ser. 143017	Edison, Thomas A	Concrete Structures
1/16/1917	1059	Pat. 1266780	Edison, Thomas A	Storage Battery
8/15/1917	1081	Pat. 1353152	Dinwiddie, William W	Production of Molded Articles
10/23/1918	1104	Pat. 1425183	Edison, Thomas A	Transmitter
11/15/1918	1107	Ser. 262922	Knierim, William H	Internal Combustion Engines
1/14/1919	1109	Pat. 1377192	Edison, Thomas A	Production of Molded Articles
3/3/1919	1115	Pat. 1452829	Edison, T A, Jr	Internal-Combustion Engines
4/24/1919	1126	Pat. 1411425	Edison, Thomas A	Production of Molded Articles
5/26/1919	1127	TM 128050	Edison, T A, Jr	Trademark "Econometer"
5/27/1919	1129	Ser. 302556	Edison, Thomas A	Recording and Reproducing Sounds
6/12/1919	1130	Pat. 1371414	Edison, Thomas A	Nickel-Plating
6/18/1919	1131	Pat. 1359972	Edison, Thomas A	Electroplating
6/24/1919	1133	Pat. 1369271	Edison, Thomas A	Cleaning of Metallic Surfaces
8/28/1919	1139	Pat. 1402751	Edison, Thomas A	Storage-Battery Electrode
9/13/1919	1140	Pat. 1379088	Edison, Thomas A	Storage Battery
9/16/1919	1141	Ser. 324291	Edison, Thomas A	Production of Nickel

Exec. Date	Folio #	Ser. or Pat. #	Primary Applicant	Abbreviated Case File Title
9/24/1919	1142	Pat. 1364359	Edison, Thomas A	Protecting-Varnish for Electrodes
9/30/1919	1143	Pat. 1379089	Edison, Thomas A	Thin Metallic Sheets or Folis
11/3/1919	1144	Pat. 1386095	Edison, Thomas A	Galvanic Batteries
11/28/1919	1146	Pat. 1410391	Edison, Thomas A	Protective Coating for Steel and Iron
12/9/1919	1148	Pat. 1456687	Edison, Thomas A	Stylus Mounting (Case A)
6/14/1920	1160	Pat. 1377194	Edison, Thomas A	Storage Battery
7/8/1920	1163	Pat. 1417464	Edison, Thomas A	Production of Thin Metal Sheets or Folis
8/23/1920	1164	Pat. 1425194	Edison, Thomas A	Production of Thin Metal Sheets or Folis
12/31/1920	1176	Pat. 1489240	Edison, Thomas A	Voltaic Battery and Electrode Elements
9/26/1921	1181	Pat. 1488480	Edison, Thomas A	Alkaline Storage-Battery Elements
11/25/1921	1183	Ser. 518181	Edison, Thomas A	Electrolytically Deposited Surface Coatings
2/8/1922	1186	Pat. 1492023	Edison, Thomas A	Sound Record
6/23/1922	1196	Pat. 1678246	Edison, Thomas A	Production of Alkali-Metal Compounds
10/18/1922	1252	Pat. 1686686	Edison, T A, Jr	Ignition Timer
5/2/1923	1204	Pat. 1495580	Edison, Thomas A	Producing Chlorinated Rubber
5/11/1923	1205	Pat. 1651196	Edison, Thomas A	Storage Battery
6/28/1923	1209	Pat. 1600722	Edison, Thomas A	Mounting for Diamonds and the Like
12/7/1923	1212	Ser. 680332	Edison, Thomas A	Roofing
2/20/1924	1217	Pat. 1599121	Edison, Thomas A	Production of Depolarizing Agent
2/25/1924	1218	Pat. 1526326	Edison, Thomas A	Storage Battery
2/2/1925	1231	Pat. 1702935	Edison, Thomas A	Receiving Apparatus: Radio and Telephone
4/28/1925	1233	Pat. 1744533	Edison, Thomas A	Diaphragms of Sound Boxes
1/25/1926	1239	Pat. 1744534	Edison, Thomas A	Production of Molded Articles
2/1/1926	1241	Pat. 1711265	Edison, Thomas A	Phonograph Reproducer
10/1/1926	1248	Pat. 1690159	Edison, Thomas A	Producing Sound-Record Tablets
11/25/1927	1268	Pat. 1740079	Edison, Thomas A	Extraction of Rubber from Plants
1/9/1930	1333	Ser. 419780	Edison, T A, Jr	Phonographs

Patent Series

Patent Application Files

Folio # 681 Sound Reproducers

Serial #: 600761

Primary Applicant: Edison, Thomas A

Date Executed: 1/3/1911

Folio No. 681

Serial No. 600-761

Applicant.

Address.

Thomas R. Eason

Title Round Reproducers

Filed Jan. 3, 1911

Examiner's Room No. _____

Assignee _____

Ass'g't Exec. _____

Recorded _____

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Patent No. _____

Issued _____

ACTIONS.

1 Rejected July 8, 1911. 16

2 Supplemental application Dec. 1, 1911. 17

3 Amended Feb. 2, 1912 18

4 Rejected Mar. 2, 1912 19

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9 _____ 24

10 _____ 25

11 _____ 26

12 _____ 27

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15 _____ 30

FRANK L. DYER,

Counsel,

Orange, New Jersey.

Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON
a citizen of the United States, residing and having a Post Office address at
Llewellyn Park, West Orange, Essex County, New Jersey,

prays that letters patent may be granted to him for the improvements in

SOUND REPRODUCERS

set forth in the annexed specification; and he hereby appoints Frank L. Dyer
(Registration No. 560), of Orange, New Jersey, his attorney, with full
power of substitution and revocation, to prosecute this application, to make
alterations and amendments therein, to receive the patent, and to transact all
business in the Patent Office connected therewith.

Thomas A. Edison

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, Essex County, New Jersey, have invented certain new and useful improvements in SOUND REPRODUCERS, of which the following is a description:-

My invention relates to sound reproducers, particularly of the type adapted to reproduce from disc records having vertically undulating record grooves, although its use is not limited to that type. The object of my invention is to construct a reproducer giving an improved quality of reproduction, by the elimination of certain foreign or metallic sounds caused by the supporting means and connections commonly employed between the stylus and the diaphragm, and by causing the stylus to track the record groove with great fidelity. Other objects of my invention will appear from the following specification and appended claims.

The lever or arm carrying the stylus and transmitting the movements thereof to the diaphragm is commonly made of metal, and therefore may produce a characteristic "ring" or metallic sound when set into vibration by the movements of the stylus. I form this part of a material and in proportions so chosen that it will produce no

V V

audible sound when the stylus is vibrated, the lever being preferably of wood. I also prefer to form the stylus-carrying arm between its pivot and the stylus with a portion stiffly resilient in a direction parallel to the movement of the stylus in tracking the record. With a vertically undulating record groove this construction has the effect of resisting movement of the stylus away from the record surface, which the momentum of the moving parts tends to produce in cases of vibrations of wide amplitude. In my construction the portion of the lever carrying the stylus and situated beyond the spring portion is of small mass and inertia, and upward movement of the stylus stresses the spring portion of the lever, which tends to hold the stylus always in contact with the record surface, while at the same time the spring portion of the lever is sufficiently stiff to transmit to the diaphragm all the vibrations of the lever due to the recorded sounds.

In order that a clearer understanding of my invention may be had, attention is hereby directed to the accompanying drawings, forming part of this specification, and illustrating the preferred form of my invention. In the drawing -

Figure 1 represents a central vertical section through a sound reproducer embodying my invention; and

Figure 2 represents an end elevation of the same looking from the left in Figure 1.

Referring to the drawings, the sound box 1 is formed in any suitable manner as by the annular member 2 and the flanged member 3 provided with the neck 4, the

threaded ring 5 being screwed into the annulus 2 to position and hold the members as shown. The diaphragm 6 is preferably secured between an annular rubber gasket 7 of circular cross section and a ring 8 preferably of steel, formed with a knife edge as shown, which is positioned to contact the edge of the diaphragm in a circular line opposite the center of the circular rubber gasket 7. A copper washer 9 may be interposed between the knife edge support 8 and the flange of member 2 as shown.

The stylus 10 is mounted in a suitable holder 11 carried by the end of lever 12 pivotally supported at 13. This lever or arm is formed of a material such that it will produce no audible sound when the stylus is vibrated, the lever preferably being made of well seasoned wood, the grain of which should preferably run in a diagonal direction, that is, preferably at an angle of approximately 45 degrees to the bottom surface 14 of the lever as shown. The upper end of the lever is secured to the center of the diaphragm in any suitable manner, as by the small bolt and nut 15, 16, and a suitable adhesive, as shellac. The lever is preferably pivoted to the ring 2 of the sound box by means of the small fixed pin 13 carried by a bracket 17, which is either secured to the ring 2 by screws 18, as shown, or may be formed integral with the ring 2. The ends of pin 13 are mounted in lugs 19 carried by bracket 17. Lever 12 is provided with a suitable opening therethrough in which is driven a small sleeve 20 which furnishes a bearing for the lever when the same is mounted with pivot pin 13 extending through the sleeve 20.

Lever 12 is provided with bosses 21 on each side of the same, sleeve 20 extending only through these bosses. Lever 12 is preferably concaved or reduced in section as shown at 22, between pivot 13 and the stylus support 11 in order to make the lever stiffly resilient in the direction of movement of the stylus 10, that is, at right angles to the record surface.

By making the lever of wood the objectionable "ring" or metallic sound produced by a metallic lever or stylus arm in operation is eliminated, my improved stylus arm giving no audible sound of its own during the operation of the reproducer. Also, by providing the lever with the spring portion shown at 22, the stylus is caused to track the record groove with greater fidelity, and the quality of the sound reproduced is improved. In devices of this character commonly used, the momentum of the moving parts is often sufficient to cause the stylus to jump entirely clear of the record surface when a portion of the sound record representing a rarefaction of considerable amplitude is being reproduced. With my invention, the spring portion of the lever is put under a certain amount of stress when the stylus travels up the slope of a rising portion of the record groove, thus tending to hold the stylus in contact with the record surface and prevent the same from jumping therefrom, the portion of the lever between the end of the same and the concaved portion 22 being of small mass and having small inertia. While the lever bends somewhat in reproduction at its most resilient portion as stated, nevertheless, the lever is caused to rock upon its pivot by the movements of the stylus in tracking the record groove, and the reproducing movements of the

stylus are transmitted to the diaphragm.

Having now described my invention, what I claim and desire to protect by Letters Patent is as follows:-

1. ^{Cancelled 2-14-11} In a sound reproducer, the combination with a diaphragm and a sound box carrying the same, of a wooden lever pivoted to said sound box and connected to said diaphragm, and a stylus carried thereby, substantially as described.
2. In a sound reproducer, the combination with a diaphragm and a stylus, of means for supporting said stylus and transmitting the movements thereof to said diaphragm, composed entirely of wood, substantially as described.
3. In a sound reproducer, the combination with a diaphragm and a stylus, of means for supporting said stylus and transmitting the movements thereof to said diaphragm, so shaped and of such material as to be non-resonant within the range of audible sounds, substantially as described.
4. In a sound reproducer, the combination with a diaphragm and a stylus, of means for supporting said stylus and transmitting the movements thereof to said diaphragm, composed entirely of non-metallic material, substantially as described.
5. In a sound reproducer, the combination with a diaphragm of a pivoted lever connected to said diaphragm and a stylus carried thereby, said lever being so shaped

and of material so chosen as to be incapable of vibrating so as to give forth an audible sound, substantially as described.

6. In a sound reproducer, the combination with a diaphragm of a pivoted lever connected to said diaphragm and a stylus carried thereby, said lever being formed with a ^{portion} between said stylus and the pivot of the lever stiffly resilient in a direction parallel to the reproducing movement of said stylus, substantially as described.

7. In a sound reproducer, the combination with a diaphragm and a stylus of a pivoted lever carrying said stylus and joined to said diaphragm and so formed in the portion thereof between its pivot and said stylus as to resist excessive movement of said stylus from the surface of a record being reproduced thereby, substantially as described.

8. In a sound reproducer, the combination with a sound box and a diaphragm positioned therein, of a lever pivoted to said sound box, and joined at one end to said diaphragm, and a stylus carried by the other end of said lever and mounted in position to track a vertically undulating record groove, the arm of said lever extending from the pivot thereof to said stylus being formed with a ^{portion} stiffly resilient in a direction parallel to the movement of said stylus in tracking said vertical undulations, substantially as described.

Am. Pat. 2,415,812 3/2/12

This specification signed and witnessed this 3rd day of January 1901

Witnesses:

Thomas A. Edison

1. Eugene Smith

2. Anna R. Keck

Oath.

State of New Jersey }
County of Essex } ss.,

THOMAS A. EDISON, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of Llewellyn Park, West Orange, Essex County, New Jersey

that he verily believes himself to be the original, first and sole inventor of the improvements in

SOUND REPRODUCERS

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

Thomas A. Edison
Sworn to and subscribed before me this 3rd day of January 1901

Anna R. Keck

[Seal]

Notary Public.

681 U

Amesbury 181/10

600 761

166
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X
Am

Fig. 1

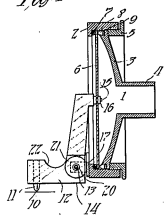
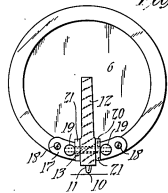


Fig. 2



Witnesses:

Frank D. Lewis
Dyer Smith

Inventor:

Thomas A. Edison
by Frank L. Burr
his Atty.

Div. 23. Room 379

Address only
"The Commissioner of Patents,
Washington, D. C."
J. K. D. -S.

2-260

Paper No. 2-101.
All communications respecting this
application should give the serial number,
date of filing, and title of invention.

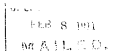
DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

February 8, 1911.

Thomas A. Edison,
Care Frank J. Dyer,
Orange, New Jersey.

Edison Laboratory.

Please find below a communication from the *EXAMINER* in charge of your application.
for Sound Reproducers, filed Jan. 4, 1911, serial number 600,761.



651

E. B. Balloore

Commissioner of Patents.

This application has been duly examined.

15 is not connected on the drawing.

The expressions, means composed entirely of wood, and means composed entirely of non-metallic material, in claims 2 and 4 respectively, are objectionable as not accurate. The supporting means include the entire sound box and the entire sound box is not of wood.

Claims 1, 2 and 4 are rejected as not patentable over McMahon, June 30, 1891, #454,947, (181-10). It being old as here shown to make the reproducing bar of wood, no invention can be seen in alone making the common type of stylus bar of wood.

Claim 3 is rejected on McMahon cited, see also Figure 6 in which the stylus bar is believed to be non-resonant.

Claim 5 is rejected upon the cited art. It is believed that applicant's stylus bar will not perform the function as broadly as claimed in this claim. Accordingly the claim is also rejected as covering a device inoperative to do that which is claimed.

Claims 6 and 8 are rejected as not patentably distinguishing from Macdonald, July 25, 1905, #795,293, (181-10). Any

#600,761-----2.

stylus bar in which there is a cut away portion ^{and} between the pivotal point, the stylus bearing point will be stiffly resilient at that particular point.

Claim 7 is rejected upon the cited art and is also rejected as not distinguishing from almost any stylus bar of the general type disclosed by applicant as French patent to Danzer, #384,542, April 11, 1908, (181-10). The Danzer patent prevents excessive movement of the stylus from the surface of the record.

Div. 23000 379

9-250

Paper No. 379 Sub. Rej.

Address only
"The Commissioner of Patents,
Washington, D. C."

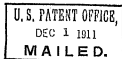
All communications respecting this
application should give the serial number,
date of filing, and title of invention.

J.H.D.-S.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

Dec. 1, 1911 .

Thomas A. Edison,
Care Frank L. Dyer,
Orange, New Jersey .



Care Edison Laboratory.

Please find below a communication from the EXAMINER in charge of your application.

for Sound Reproducers, filed Jan. 4, 1911, serial number 600,761 .

E. B. Mottel

Commissioner of Patents.

This action is supplementary to the office action of
February 8, 1911 .

All of the claims are additionally rejected upon the
disclosure by W. B. Stout in the Scientific American of
April 27, 1901 in an article entitled "How to make a Gramophone",
wherein the stylus bar is made entirely of wood .

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON,)
SOUND REPRODUCERS,)
Room No. 379
Filed January 3, 1911]
Serial No. 600,761.)

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to Office action of December 1, 1911, please amend the above entitled case as follows:

Cancel claims 1, 2, 3, 4, 5 and 7 and change the numerals of claims 6 and 8 to 1 and 2 respectively.

In line 4, claim 1 (former claim 6) after "a" insert - spring - .

In line 8, claim 2 (former claim 8) after "a" first occurrence, insert - spring - .

Add the following claims:

3. In a sound reproducer, the combination with a diaphragm, of a pivoted lever connected to said diaphragm and a stylus carried thereby, said lever being formed with a yielding portion stiffly resilient in a direction parallel to the reproducing movement of said stylus, substantially as described.

4. In a sound reproducer, the combination with a diaphragm, of a pivoted wooden lever connected to said diaphragm and a stylus carried thereby, said lever being formed with a yielding portion stiffly resilient in a direction parallel to the reproducing movement of said

stylus, substantially as described.

5. In a sound reproducer, the combination with a diaphragm, of a pivoted lever connected to said diaphragm and a stylus carried thereby, said lever being formed with a portion of reduced cross section to render the same yielding and stiffly resilient in a direction parallel to the reproducing movement of said stylus, substantially as described.

6. In a sound reproducer, the combination with a diaphragm, of a pivoted wooden lever connected to said diaphragm and a stylus carried thereby, said lever being formed with a portion of reduced cross section to render the same yielding and stiffly resilient in a direction parallel to the reproducing movement of said stylus, substantially as described.

R E M A R K S

The Examiner is respectfully requested to connect the reference numeral 15 in Fig. 1 of the drawings with the bolt coacting with the nut 16 to secure the upper end of the stylus lever to the diaphragm.

None of the references of record discloses a sound reproducer having a diaphragm and a stylus lever connected to said diaphragm and formed with a yielding portion stiffly resilient in a direction parallel to the reproducing movement of the stylus. In the patent to Macdonald of record, there is no reference to the construction of the stylus lever of a yielding material nor any

reference to the necessary form, proportions and dimensions of the stylus lever to render the same yielding and stiffly resilient. Evidently, the mere provision of a "cut-away portion", as suggested by the Examiner, without the use of proper material and proper dimensions would not produce a stylus lever having the qualities specified above. Stout and Danzer also do not disclose the yielding and stiffly resilient features of applicant's stylus lever. McMahon's device is of an entirely different character from Applicant's device and is thought to have no bearing on the invention as now claimed. In none of the references of record is there any contemplation or appreciation of the structure claimed, nor of the advantages or improved results derived therefrom; and the claims are accordingly thought to be patentable.

Reconsideration and allowance are respectfully requested.

Orange, New Jersey,
February 2, 1912.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Ayer
His Attorney.

Div. 23 Room 379

Address only
"The Commissioner of Patents,
Washington, D. C."
J. H. D. - S.

2-200

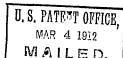
Paper No. 5, Red.

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

March 4, 1912.

601
Thomas A. Edison,
Care Frank L. Dyer,
Orange, New Jersey.



Please find below a communication from the EXAMINER in charge of your application.

for Sound reproducers, filed Jan. 4, 1911, serial number 600,761.

E. B. Moore

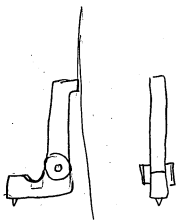
Commissioner of Patents.

This action is responsive to the amendment filed Feb. 3, 1912.

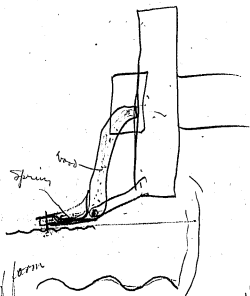
Claims 1 and 2 are rejected upon French patent to Gwozdzi, October 1, 1909, #406,700, (181-11). It is believed that the reduced section below the bearing points will render the stylus bar stiffly resilient at that point although it may not be so described. In other words, it is believed that the cited structure will perform the function claimed by applicant.

Claims 3 and 5 are rejected upon Valiquet, June 4, 1907, #855,736, (181-11), see 17; Martin, nec. 8, 1908, #905,899, (181-11), see 36, or Gleason, Aug. 11, 1908, #296,606, (181-11), see especially 48. As to Martin or Valiquet, no invention is found in substituting a pivotal mounting for the mounting disclosed as a pivotal mounting for the stylus bar is one of the most common expedients in the art.

Claims 4 and 6 are rejected upon the art cited against claims 3 and 5, in view of the disclosure by Stout in the Scientific American of record. Invention is not found in making the cited stylus bars of material shown to be old.



C.H.
J.H.
Dec 16 1910
Hess 611 Harris



Ref form

#4
#5
Dec 16 1910

C.H.
Hess 611 Harris
Dec 16 1910

January 29, 1913

Messrs. Bacon & Milans,
908 G Street,
Washington, D. C.

Gentlemen:

Please secure for me as soon as possible, prints
of the drawings in French patent to Gwozdz, October 1, 1909,
No. 406,700, and charge the cost of same to Thomas A. Edison,
Incorporated, A. (Folio 681)

Very truly yours,

MJK

General Counsel

L. R. BACON
JOSEPH E. MILANS
—
CALVIN C. MILANS
THOMAS E. HEATH
GEORGE B. RILEY

BACON & MILANS

Counsellors at Law

SOLICITORS IN PATENT AND TRADE-MARK CAUSES
MCGILL BUILDING, 608 G STREET, NORTHWEST
WASHINGTON, D. C.

CABLE ADDRESS
"NOCIAM"

LONG DISTANCE TELEPHONE
MAIN 1800

February 1, 1913.

Delos Holden, Esq.,

Orange, N. J.

Dear Sir:-

In keeing with the request contained in
your favor of the 29th ult., we are enclosing herewith
prints of French patent to Gwozdz No. 406,700.

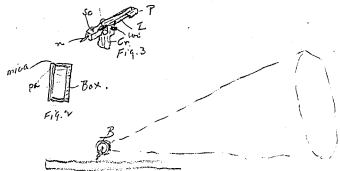
Very truly yours,

K.

Bacon & Milans

7.681.

Will B. Stout,
Scientific American
Apr. 27, 1931



WILL B. STOUT
SCIENTIFIC AMERICAN

Apr. 27, 1901.

"The sound reproducing part consists principally of the "sounding box" and its lever and the horn. The box may be an old wooden pill box or may be cut from inch pine. It should be circular about an inch and a half in diameter, inside measurement, and an inch deep. If cut of inch pine the central hole will be cut clear through the piece and a quarter inch backing, or bottom of the horn glued on a three quarter inch hole is drilled in one side of the box to receive the horn. To the front of the box is glued a thin diaphragm of isinglass, outside of which is glued a paper ring, or washer, as large as the rim of the box. The writer used one machine for a while, which had a tight paper diaphragm; but the isinglass is better. The box is shown in section in Fig. 2. The lever (Fig. 3) is cut out of hard wood in the shape shown; the distance from the wire axle, w_1 , to the centre of the part, p , being the radius of the box outside. The other end of the lever is a trifle shorter than the inner end, and holds at its end the needle, n , in a small awl hole. This needle is held in place by a small screw. So, so that its projection from the wood may be adjusted till the clearest effect is produced. The lever is mounted in a crotch, Cr , cut also from hard wood, the axle, w_1 , being a wire. The crotch part is glued on to the side of the box at an angle of about 120 degrees with the hole already cut to

receive the horn, the part p. of the lever, being fastened to the centre of the mica or isinglass diaphragm with glue or sealing wax." * * * * *

"while not up to the machine made product, yet it is not far behind, and for the satisfaction of the maker for the time spent in its manufacture, it 'can't be beat' ".

Patent Series
Patent Application Files

Folio # 682 Sound Reproducurs

Serial #: 600762

Primary Applicant: Edison, Thomas A

Date Executed: 1/3/1911

Folio No. 682

Serial No. 600,762

Applicant.

Address.

Thomas A. Edison

Title Sound Reproducing

Filed Jan. 24, 1911

Examiner's Room No. _____

Assignee _____

Ass'g't Exec. _____

Recorded _____

Liber _____

Page _____

Patent No. _____

Issued _____

ACTIONS.

1 Rejected Feb. 8, 1911 16

2 Annulled Jan. 26, 1912 17

3 _____ 18

4 _____ 19

5 _____ 20

6 _____ 21

7 _____ 22

8 _____ 23

9 _____ 24

10 _____ 25

11 _____ 26

12 _____ 27

13 _____ 28

14 _____ 29

15 _____ 30

FRANK L. DYER,

Counsel,

Orange, New Jersey.

2

Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON
a citizen of the United States, residing and having a Post Office address at
Llewellyn Park, West Orange, Essex County, New Jersey

prays that letters patent may be granted to him for the improvements in

SOUND REPRODUCERS

set forth in the annexed specification; and he hereby appoints Frank L. Dyer
(Registration No. 560), of Orange, New Jersey, his attorney, with full
power of substitution and revocation, to prosecute this application, to make
alterations and amendments therein, to receive the patent, and to transact all
business in the Patent Office connected therewith.

Thomas A. Edison

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, Essex County, New Jersey, have invented certain new and useful improvements in SOUND REPRODUCERS, of which the following is a description:-

My invention relates to sound reproducers and my object is to provide means for eliminating to a considerable extent the harsh and foreign noises which are usually heard during the reproduction by such devices from a record. In the operation of the reproducer, vibrations of the air are set in motion by the movement of the front of the diaphragm as well as by the movement of the rear of the diaphragm which is connected to the horn or sound amplifier. The front of the diaphragm or that side to which the stylus is connected is usually open to the air and the sounds given off thereby should be stopped or prevented from passing through the air to the ear of the listener. I have determined that foreign and objectionable noises are made by the movement of the stylus lever upon its pivot and commonly by the vibration of the moving parts themselves. Accordingly, in my invention I provide means for enclosing the front of the diaphragm, and also preferably the pivot and the greater part of the

stylus arm or lever within a suitable closure or muffler, which prevents the sounds referred to from setting up vibrations in the atmosphere. I preferably enclose the whole sound box in a metallic container of neat appearance, the stylus and a portion of its support extending through a small opening in the same. The container should be of a form and material so chosen as not itself to be capable of being set in vibration of a character to produce audible sounds. The objects of my invention in accordance with the foregoing statement are more fully disclosed in the following specification and appended claims.

In order that my invention may be more clearly understood, attention is hereby directed to the accompanying drawing, forming part of this specification, and illustrating a preferred embodiment of my invention. In the drawings, Figure 1 represents a central vertical section through a sound reproducer provided with my invention, certain parts being shown in side elevation; and Figure 2 represents a section on line 2-2 of Figure 1, looking to the right.

The sound box 1 is provided with the usual diaphragm, to which vibrations are imparted by the stylus 2 carried by lever 3 pivoted as shown at 4 to the sound box 1, the upper end of lever 3 being connected or fastened to the diaphragm in any usual or desired manner. The closure 5 is preferably of brass and approximately spherical in form, enclosing the sound box 1, the upper arm of lever 3 and the pivot 4 thereof, the lower arm of the

lever extending downwardly through opening 6 adjacent the lower portion of the container 5. The closure 5 may conveniently be made in two parts, the approximately hemi-spherical portion 7 which is integral with a short tube 8 adapted to be slipped over the neck of the reproducer as shown, and the hemi-spherical portion 9 adapted to be joined to the portion 7 to form the complete closure. The connection may be made between the two parts by bonding the adjacent edges of the portions, as shown at 10, to form a spring fastening means. The parts may be located with respect to each other by means of a pin 9' secured to member 9 and inserted in a slot in member 7 when the parts are brought together. By forming the closure as a continuous sphere or continuously arched member, vibrations of the same, such as might be produced by a metallic cylindrical closure having a plane surface parallel to the diaphragm are prevented. Vibration of the closure would similarly be prevented if only the front portion 9 of the closure were used, the edges of the same being secured firmly to the sound box 1. I prefer, however, to use the form of closure illustrated, in which the sound box is entirely surrounded, and all sounds except those produced by the diaphragm and transmitted therefrom through the neck 11 to the amplifying horn, muffled or eliminated. The sound box connection may be provided with the universal joint shown at 12 if desired, excessive movement of the reproducer in both a vertical plane and in a direction transverse to the record grooves being prevented by the coaction of pin 13 secured to portion

2 of closure 5 with stirrup 14 carried by a member 15 secured to the horn connection 16, stirrup 14 preferably being formed with a triangular opening therethrough as shown.

Having now described my invention, what I claim and desire to protect by Letters Patent is as follows:-

1. In a sound reproducer, the combination with a sound box, a diaphragm carried thereby, a lever pivoted to said sound box and connected to said diaphragm, and a stylus carried by said lever, of a substantially non-sound-transmitting closure mounted to cover the front side of said diaphragm and a portion of said lever including the pivot thereof, substantially as described.

Cancelled 4/6/12
2. In a sound reproducer, the combination with a diaphragm, stylus, and lever connecting the stylus to the diaphragm, of a metallic closure mounted to cover the side of said diaphragm to which said stylus is connected and prevent the escape of sound vibrations therefrom, said closure being of such a form as to be substantially incapable of being set into vibrations corresponding to audible sounds, substantially as described.

3. In a sound reproducer, the combination with a diaphragm, stylus, and lever connecting the stylus to the diaphragm, of a substantially non-sound-transmitting closure in the form of a continuous arch, the ends of which are secured, mounted to cover the side of said diaphragm to which said stylus is connected and prevent

the escape of sound vibrations therefrom, substantially as described.

2. In a sound reproducer, the combination with a sound box, a diaphragm carried thereby, a lever pivoted to said sound box and connected to said diaphragm, and a stylus carried by said lever, of a closure in the form of a continuous closed arch entirely enclosing said sound box, the horn connection of said sound box and said stylus extending out through said closure, substantially as described.

Quoted in column 3 - before

This specification signed and witnessed this 3d day of January 1901

Thomas A. Edison

Witnesses:

1. Eyr. Smith

2. Anna R. Kleban

Oath.

State of New Jersey } ss.,
County of Essex

THOMAS A. EDISON, the above named
petitioner, being duly sworn, deposes and says that he is a citizen of the United
States, and a resident of

Ilwellyn Park, West Orange, Essex County,

New Jersey

that he verily believes himself to be the original, first and sole inventor of the
improvements in

SOUND REPRODUCERS.

described and claimed in the annexed specification; that he does not know and
does not believe that the same was ever known or used before his invention or
discovery thereof; or patented or described in any printed publication in the
United States of America or any foreign country before his invention or
discovery thereof, or more than two years prior to this application; or patented
in any country foreign to the United States on an application filed more than
twelve months prior to this application; or in public use or on sale in the
United States for more than two years prior to this application; and that no
application for patent upon said invention has been filed by him or his legal
representatives or assigns in any foreign country.

Thomas A. Edison

Sworn to and subscribed before me this 3d day of December 1901

Anna R. Kleban

[Seal]

Notary Public.

DIV. 25 Room 379

2-260

Paper No. 871

Address only
"The Commissioner of Patents,
Washington, D. C."

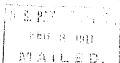
All communications respecting this
application should give the serial number,
date of filing, and title of invention.

J. H. D. - C. 682

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

Feb'y. 8, 1911.

Thomas A. Edison,
Care Frank L. Dyer,
Orange, New Jersey.



Please find below a communication from the EXAMINER in charge of your application.

for Sound reproducers, filed Jan. 4, 1911, serial number 600,762.

E. B. Moore.

Commissioner of Patents.

This application has been duly examined.

It being common in this art to enclose the diaphragm
stylus bar and mountings as in Runge, Sept. 25, 1906, #831,995,
(161-11), no invention can be seen in making a container of
spherical shape as in German patent #187,705, Aug. 8, 1907, (161-10)
and all of the claims are accordingly rejected.

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON,)
SOUND REPRODUCERS,)
Filed January 4, 1911,) Room No. 379
Serial No. 600,762.)

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to Office action of February 8, 1911, please amend the above entitled case as follows:

Cancel claims 2 and 3 and change the numeral of claim 4 to 2.

Add the following as claim 3.

3. In a sound reproducer, the combination with a sound box, a diaphragm carried thereby, a lever pivoted to said sound box and connected to said diaphragm, and a stylus carried by said lever, of a substantially non-sound transmitting closure in the form of a continuous closed arch entirely enclosing said sound box and also enclosing a portion of said lever including the pivot thereof, the horn connection of said sound box and said stylus extending out through said closure, substantially as described.

R E M A R K S

The Examiner is respectfully requested to change the reference character designating the pin co-acting with the stirrup 14 from 3 to 13 in both of the figures.

Claims 1 and 2 are thought to be allowable in their original form and have, therefore, not been amended. Claim 1 differentiates from the patents of record by speci-

tying "a substantially non-sound transmitting closure mounted to cover the front side of said diaphragm and a portion of said lever including the pivot thereof". Referring to the patent to Runge, the function of the cover ^{not} disclosed therein is to prevent transmission of sound from the front of the diaphragm and the stylus lever pivots but to prevent disturbance of the device by an accidental blow and to shut out dust and dirt. See lines 97 to 101, page 1 of Runge's specification. The material of which the cover is made is not specified by Runge; and considering his invention as disclosed, a material capable of vibrating and accordingly of transmitting sounds might be employed. In the German patent of record, reference to the material of which the member g is made is likewise omitted and the stylus lever is not supported on pivots within the said member g.

Claims 2 and 3 specify that the enclosure entirely encloses the sound box. In neither of the patents of record is the rear of the sound box enclosed, and the vibrations emanating from this part of the sound box are accordingly free to be transmitted to the ears. In applicant's device, this objection is obviated by entirely enclosing the sound box.

The now claim which is presented herewith sets forth that the entire sound box and also a portion of the stylus lever including the pivot thereof is enclosed by a substantially non-sound transmitting closure in the form of a continuous closed arch, features which, as set forth above, are not disclosed in the references of record.

Reconsideration and allowance are respectfully
requested.

Orange, New Jersey,
January 26, 1912.

Respectfully submitted,

THOMAS A. EDISON,

By

Frank L. Dyer,
his Attorney.

Div. ~~4~~ Room 379

Address only
"The Commissioner of Patents,
Washington, D. C."
J.H.D.-G. 682

2-280

Paper No. 201.

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

March 1, 1912.

Thomas A. Edison,
Care Frank L. Door,
Orange, New Jersey.

U. S. PATENT OFFICE,
MAR 1 1912
MAILED.

Please find below a communication from the EXAMINER in charge of your application.

for Sound reproducers, filed Jan. 4, 1911, serial number
680,662.

E. B. Wilson

Commissioner of Patents.

This action is responsive to the amendment filed Jan. 27,
1912.

As applicant's constructs his casing of metal, an excellent
sound transmitting means, he must depend on the form of his
casing rather than on the material thereof to provide a non
sound transmitting casing. This is further borne out by the
context of the specification. This being true, the
the German device is operative to perform this function if
applicant's structure is. Note that the German reference has
a complete sound box inside of his spherical casing except
that the stylus bar is supported from the outer casing instead
of from the inner. Invention is not seen to be involved in alone
supporting the German stylus bar from the inner casing, especial-
ly in view that it is old to provide the stylus bar mounting
inside of a casing as in Runge of record or Johnson, Sept. 13,
1904, #769,696, (181-3). Accordingly all of the claims are
rejected.

Claim 1 is also rejected on Johnson alone. Moreover, non
sound transmitting casings are old as in Johnson cited; Robinson,
Dec. 27, 1904, #778,271, (181-3), or Bettini, Dec. 20, 1892,
#488,379, (181-10) and invention is not found in making such

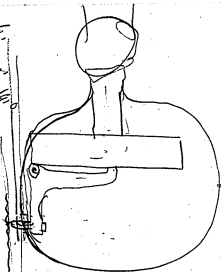
#600,762-----2.

is identical in view of the German structure. Hence all of the claims are additionally rejected.

In the structure of Jacques, May 22, 1888, #383,599, (181-2), the sound box is enclosed in a non sound transmitting casing. In German patent #215,668, July 15, 1908, (181-3), the sound box is entirely enclosed in a casing that will exclude the sound. Invention is not found over these two structures in applicant's structure and the claims are additionally rejected for such reasons. Furthermore, Mount, Feb. 22, 1910, #945,939, (181-3), discloses the isolation of the sound rising on one side of the diaphragm from that rising on the other side. Note that in this structure the stylus bar mounting is inside of the casing. While Mount conducts the sound from both sides of the diaphragm to the ears. In view of the references of record, invention is not found in completing the enclosure provided for the outer side of the diaphragm. Accordingly all of the claims are additionally rejected for such reason.

L.H.E.
Resting Room
Dec 16 1910
#5
Dec 16 1910
Dyer Smith

Enclosed Speeches



L. R. BACON
JOSEPH H. MILANS
—
CALVIN S. MILANS
THOMAS H. BEATH
GEORGE D. MILAY

BACON & MILANS
Counsellors at Law

SOLICITORS IN PATENT AND TRADE-MARK CAUSES
MCGILL BUILDING, 908 G STREET, NORTHWEST
WASHINGTON, D. C.

CABLE ADDRESS
"NOCAM"

LONG DISTANCE TELEPHONE
MAIN 1899

Dec. 30, 1910.

Dyer Smith, Esq.,
Orange, N. J.,

Dear Sir:-

Referring to your favor of the 29th inst., we
beg to advise you that we have made title searches of the
patents referred to in your letter and have to report as
follows:-

Apple, 932,087:-

We have to report that we have been unable to
find any instruments of record affecting the title to this
patent up to and including Dec. 15, 1910, the last date of
record on the assignment digest.

Robinson, 778,271:-

We have made a careful search through the assign-
ment records with reference to this patent and have found
but one assignment of record affecting the title thereto,
namely, an assignment from Eugene M. Robinson to Rudolph-
Wurlitzer Co., corporation of Ohio, Cincinnati, O., assign-
ing all the right, title and interest in patents Nos.
778,271, 813,670, and 831,188, and all rights of recov-
ery for past infringements thereof by third parties. This
assignment was acknowledged Sept. 20, 1906, and recorded
Jan. 6, 1907, in Liber V, 75, page 273.

Robinson.

Jan 1911

See as to purchase if

we use similar structure

in disc machine when put out. S.S.

182

F 682

778271

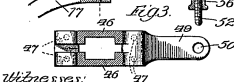
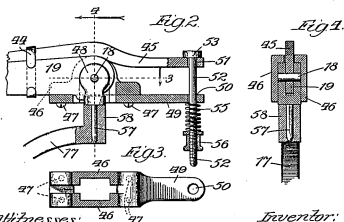
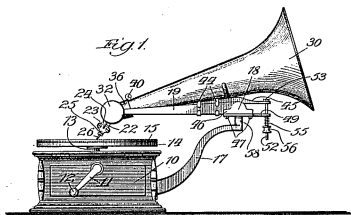
No. 778,271.

PATENTED DEC. 27, 1904.

E. M. ROBINSON
PHONOGRAPH.

APPLICATION FILED MAY 12, 1904.

2 SHEETS--SHEET 1.



Witnesses:
E. Gaylord,
John Enders.

Inventor:
Eugene M. Robinson,
By Dwight B. Cheever
A224

Smith
Dec. 22, 1910.

Mr. Dyer:-

Mr. Edison is desirous of mounting a closure over the front of the reproducer, as shown in the patent drawing which I hand you herewith, to smother the sounds given off by the front of the diaphragm. A device dominating this is shown in patent to Robinson, No. 778,271, Dec. 27, 1904 herewith. The only substantial difference is that Robinson makes his enclosing cap 32 of cardboard or other non-sound-transmitting material and cylindrical in form, while Mr. Edison makes his of brass preferably, and rounds it out as illustrated to prevent vibration of the same. I think Robinson's Claim 2 is infringed by this device, and would recommend that we attempt to buy Robinson's patent if Mr. Edison wishes to use the device in the machine to be manufactured.

D. S.

DS-JS
Smith

1638

MEMORANDUM

FRANK L. DYER,
ORANGE, N. J.

F682

Mr. Smith:

12/23/10.

Referring to your note of the 22nd inst., I hardly think it worth while to attempt to buy the patent to Robinson for the following reasons:

1. It has not been definitely decided to enclose the open side of the speaker as Mr. Edison proposes. When that has been definitely decided the question of buying the Robinson patent can be considered.

2. I do not think Mr. Edison's suggestion infringes the Robinson patent. Robinson slides his cap over the body of the speaker and holds it in place frictionally. Both the

D.S.-2

second and third claims are limited to the fact that the cap is "adapted to slidably fit over and cover one side of the reproducer of the phonograph". Mr. Edison's device is simply a spherical containing box entirely surrounding the reproducer and not fitted to it; this strikes me as being a different invention.

3. The idea of muffling the sounds developed at the open side of the diaphragm is very old, and I think you will find a number of Edison patents disclosing this. Perhaps there are other patents. The suggestion has often been developed in the Laboratory and is one of the common thoughts of the phonograph business. No doubt Mr. Pierman or Fred Ott can give you a good deal of information on this point.

FLD/IWW

F. L. Dyer

Patent Series

Patent Application Files

Folio # 688 Storage Battery

U.S. Patent #: 1034002

Primary Applicant: Edison, Thomas A

Date Executed: 1/25/1911

Mr. Igor Smith

Dear Sir:

In reference to our conversation
of yesterday noon about Nickel-
hydroxides, I beg to state that
Mr Edison wishes to speak the matter
over with you before I give you the
necessary information

Yours respectfully
James H. Muller

12/29/10.

precipitate the nickel hydroxide then add to the pulp while it is stirring a pulp of recently precipitated Bismuth hydroxide which has not been dried. Then continue the stirring of the pulp until the whole is

thoroughly mixed together. ~~the pulp~~ is then dried & after drying ~~the pulp~~ it is thoroughly washed & reduced when ready for use.

by this procedure the Bismuth hydroxide does not become anhydrous before drying & segregates

in the nickel hydroxide but becomes anhydrous on drying when it is prevented from segregating.

Patent Series

Patent Application Files

Folio # 691 Insulating Compound

U.S. Patent #: 1083354

Primary Applicant: Edison, Thomas A

Date Executed: 1/25/1911

Written by Mr. Edison in
my journal about January 14, 1911.
Dyes Smith (Jan. 25/11)

2

A new article of paper
an insulating Compound
Composed of ~~Tetrachloro~~

Tetrachloronaphthalene mixed
with an amorphous substance
like asphalt—

Tetrachloronaphthalene has
the most powerful tendency
to Crystallize of any organic
Chemical substance.
Moreover it crystallizes
as a felt of needles which
are tough & flexible.
It will crystallize when

mixed with a large
amount of an amorphous
substance like asphalt.
If combined with
asphalt, the resultant
mass is not porous
yet the greater percent
is composed of felted
needles. These needles
makes the Compound
very tough & what is of
great consequence it is
not soft or sticky at
a temperature of 125 deg

3

Take a nat brittle
 30 degrees below zero
 Jaki; The remarkable
 property of retaining
 its toughness at low
 temperatures is due to
 the fact that it is felted
 & that the crystals are still
 flexible at these low
 temperatures -

Another property which
 is valuable is that
 it is neither attacked
 by hot acids or alkali

~~It~~ prefer to use
 Jaki 66% (Pure)
 apli n. C. 1-16
 Crude 35: 2% (hard Cuban)

1
Christensen

give him 50 portions
of Tetanus Asphall
Compound for
dipping Cans

Edwin

Patent Series
Patent Application Files

Folio # 692 Composition for Sound-Records and Other Objects

U.S. Patent #: 1002505

Primary Applicant: Edison, Thomas A

Date Executed: 1/25/1911

Received By Smith
December 1911.

Mixture of shellac &
Tetrachloronaphthalene,
with very finely ground
Asbestos

The Tetrachloronaphthalene is
melted. The powdered shellac
is gradually added while
the melted liquid is
agitated by a Pelican,
after all the shellac is
added, finely divided
Asbestos fibre is added
The whole making a
liquid of consistency
of Syrup.

The mould is open at a

2.
high speed & the liquid
poured into it by a
bent funnel while
spinning - ~~mould~~
and a feed records the
mould is checked a
little by a spray
of water. It is ~~then~~
~~then~~ reamed to a proper
size for $1/4$ " at each
end, then the mould
is put in chilling
Chamber the record
contracts free of
the mould.

3

The two rings made
separately are moved in
the vacuum End's.
a vacuum by shellac
vacuum - finally
the record is vacuumed
to the Taper of the
phonograph -

Using the same Composition
from the rings, prevents
Cracking from Calendering
on shipping in very
Cold Weather

Shellac 37 1/2
tba 12 1/2
Asbestos 15

15

5

- 1.25 - dichlorhydric
+ 30% alpha
asbestos

15 lbs 4 lbs 1 mitotolul
12 asbestos

15 lbs 3 lbs 2 mitotolul - 12 asbestos

15 lbs 4 lbs 1 paraffin 12 asbestos

15 lbs 3 lbs 2 12

15 4 1 diamide 12

15 3 2 12

15 4 1 mitotolul 12 12

2

D. J.

Mr. Edison wishes you
now to proceed with this matter.

J. H. Dyer
c.

1/18/11

Legal Dept -

1 letter w/len.
48 shell loc.

Have I patented (applied)
for Shellac combined
with Tetrachloronaphthalene
Dinitro Benzal or Dinitro toluol
for phonos becomes ~~it~~
I did for Shellac & Naphthalene
See me about it

Edison

Note also about the
Composite Record -

Received
Dyer Smith
11/14/1911

This memo. for Dyer Smith.

Patent Series
Patent Application Files

Folio # 698 Sound-Box for Phonograph

U.S. Patent #: 1187146

Primary Applicant: Holland, Newman H

Date Executed: 2/15/1911

NAME _____ SUPERSEDES No. _____
EXPERIMENTAL RECORDER. BUSINESS PHONE. SUPERSEDED BY No. _____

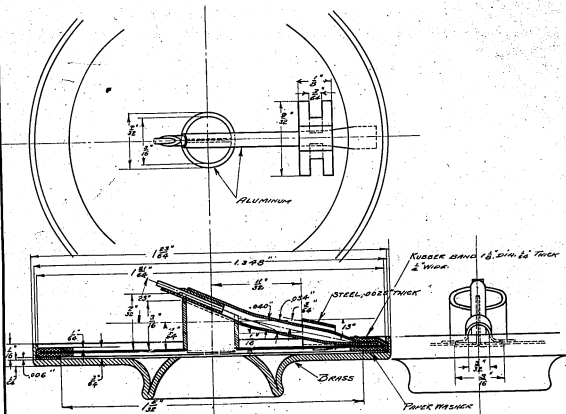
SUPERSEDES No

DRAWING **No.**
PART
PATTERN

MATERIAL

SIZE OF STOCK FOR ONE

QUANTITY OF STOCK FOR 100 — 500 — 1000



WHERE USED

UNIT

[illegible]

g

0

7

8

1.

2

1

1

1

11

CONCLUSIONS

DRAWN BY L. R.
TRACED BY L. R.

CHECKED BY
APPROVED BY

ORANGE, N. J.

DATE SEPT. 15, 10

NAME _____ SUPERSEDES No. _____
EXPERIMENTAL RECORDER. BUSINESS PHONE. SUPERSEDED BY No. _____

SUPERSEDES No.

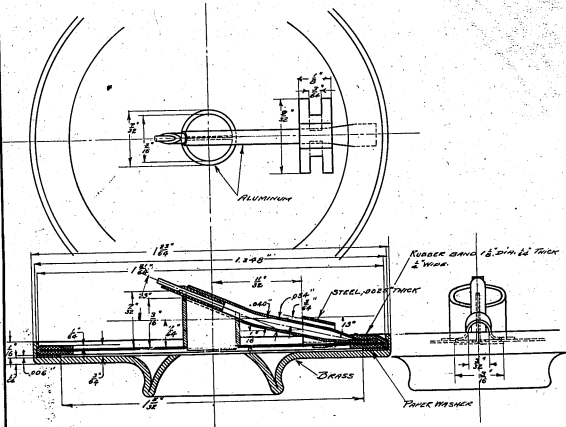
DRAWING PART PATTERN

No.

MATERIAL

SIZE OF STOCK FOR ONE

QUANTITY OF STOCK FOR 100 — 500 — 1000



WHERE USED

UNIT
No.

QUANTITY
FOR ONE

6

10

7

8

3

2

5

51-

1

— 6 —

CONCLUSIONS

DRAWN BY L. Rose
TRACED BY L. Rose

CHECKED BY
APPROVED BY

ORANGE, N. J.

DATE SEPT. 15, 10

9

Patent Series
Patent Application Files

Folio # 700 Talking Machines (Case A)

Serial #: 609099

Primary Applicant: Edison, Thomas A

Date Executed: 2/15/1911

Folio No. 700

Serial No. 609, 009

Applicant.

Address.

Thomas A. Edison
Muselynn Park
N. B. N. J.

Title Talking Machines (a.)

Filed February 17, 1911

Examiner's Room No. _____

Assignee _____

Ass'g't Exec. _____

Recorded _____

Liber _____

Page _____

Patent No. _____

Issued _____

ACTIONS.

1 Rejected March 15, 1911 10
2 Issued Feb. 24, 1912 17
3 Rejected Mar. 27, 1912 18
4 _____ 10
5 _____ 20
6 _____ 21
7 _____ 23
8 _____ 23
9 _____ 24
10 _____ 25
11 _____ 26
12 _____ 27
13 _____ 28
14 _____ 29
15 _____ 30

FRANK L. DYER,

Counsel,

Orange, New Jersey.

cc

Petition.

To the Commissioner of Patents:

Our Petitioner THOMAS A. EDISON,
a citizen of the United States, residing and having a Post Office address at
Llewellyn Park, West Orange, County of Essex, State of New Jersey

prays that letters patent may be granted to him for the improvements in

- TALKING MACHINES -

set forth in the annexed specification; and he hereby appoints Frank L. Dyer (Registration No. 560), of Orange, New Jersey, his attorney, with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent Office connected therewith.

Thomas A. Edison

S P E C I F I C A T I O N .

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, in the County of Essex and State of New Jersey, have made a certain new and useful invention in TALKING MACHINES, of which the following is a description:

My invention relates to talking machines and more particularly to means for holding the sound record employed with such machines against rotation with reference to its support.

It has heretofore been customary in machines in which a record of disc form was supported on a rotatable support to rely upon the friction between the record and support to prevent relative rotary movement between these parts. When, however, a reproducer of considerable weight is used with such machines, it is found that this friction is not sufficient to prevent such relative movement and that the reproduction is accordingly imperfect. It is the object of my invention to obviate this objection by the provision of means for positively locking the record to its support.

With this and other objects in view, my invention consists of the features hereinafter set forth and claimed.

In order that my invention may be more fully understood, attention is hereby directed to the accompany-

ing drawing forming a part of this specification and in which -

Figure 1 represents a central, vertical sectional view of a portion of a talking machine embodying one form of my invention, some of the parts being shown in elevation.

Figure 2 represents a plan view thereof;

Figure 3 represents a central, vertical sectional view of a device embodying a modified form of my invention and

Figure 4 represents a plan view thereof.

In all of the views corresponding parts are designated by the same reference numerals.

Referring to Figures 1 and 2, 1 represents the top of the cabinet of a talking machine in which is rotatably mounted the shaft 2 for driving the table 3, which is adapted to support a sound record 4. 5 represents a pin or equivalent means for securing the table 3 to the shaft 2. The upper end 6 of the shaft projects above the table and is adapted to engage the central aperture 7 in the record and thus to form a bearing for the record.

In order to prevent relative rotation between the record and the shaft 2, the end 6 of the latter is provided with a key or equivalent means 8 preferably engaging in a slot or key way 9 in the record. In the form of my invention shown in Figures 1 and 2, this key is solid with the shaft 2. In the modification shown in Figures 3 and 4, the key is slidable radially of the shaft and record in the recess 10 in the shaft 2 and is

forced into engagement with the record by a spring or equivalent yielding means 11. While the key in this modification is shown as co-operating with a keyway, obviously this modification could be used with records not provided with a key way. In the latter case, the key would be forced into the recess 10 and would be held by the spring 11 in firm frictional engagement with the wall of the aperture 7 in the record. As shown in Figure 3, the key 8 co-operates with a key way 12 in the table 3 to lock the latter to the shaft 2.

Having now described my invention, what I claim as new and desire to secure by Letters Patent of the United States is as follows:

amended 4-1-12
1. In a talking machine, the combination of a record support, a record carried thereby, and a rotatable driving shaft secured to said support and forming a bearing for said record, said shaft and record being provided with means for positively locking the same against relative rotation, substantially as described.

2. In a talking machine, the combination of a record support, a record carried thereby, and a rotatable driving shaft secured to said support and forming a bearing for said record, said shaft and record being provided with interfitting means for positively locking the same against relative rotation, substantially as described.

3. In a talking machine, the combination of a record support, a record carried thereby, and a rotatable driving shaft secured to said support and forming a bearing

Claim 1
for said record, said shaft and record being provided with a key and slot connection for locking the same against relative rotation, substantially as described.

4. In a talking machine, the combination of a record support, a rotatable driving shaft secured to said support and forming a bearing for the record, a key mounted in said shaft and means for forcing the said key into engagement with the record to lock the same against rotation with respect to said shaft, substantially as described.

5. In a talking machine, the combination of a record support, a rotatable driving shaft secured to said support and forming a bearing for the record, a key mounted in said shaft, and yielding means for forcing the said key into engagement with the record to lock the same against rotation with respect to said shaft, substantially as described.

6. In a talking machine, the combination of a record support, a rotatable driving shaft secured to said support and forming at its upper end a bearing for the record, the said upper end of the shaft being provided with a recess, and a spring pressed key slidably mounted in said recess, and adapted to lock the record against rotation with respect to said shaft, substantially as described.

Device for locking record - shaft

This specification signed and witnessed this 15 day of February 1911

Thomas A. Edison

Witnesseth:

1. Marick Bachman

2. Anna P. Ketchum

Oath.

State of New Jersey } ss.
County of Essex }

THOMAS A. EDISON, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of Llewellyn Park, West Orange, New Jersey

that he verily believes himself to be the original, first and sole inventor of the improvements in TALKING MACHINES

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

Thomas A. Edison

Sworn to and subscribed before me this 15 day of February 1911

ANITA N. KLEIN
NOTARY PUBLIC STATE OF NEW JERSEY
COMMISSION EXPIRES JUNE 1913

[Seal]

Notary Public.

701 5

609100

184

184
5

Fig. 1

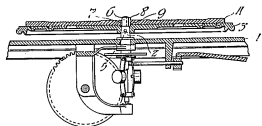


Fig. 2

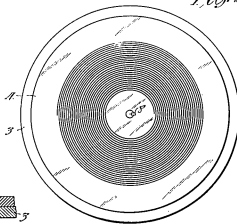
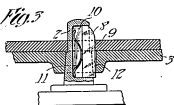


Fig. 3



Fig. 4



Witnesses:

Frank D. Lewis
Frederick Bachmann

Inventor:

Thomas A. Edison
by Thomas A. Edison
His Atty.

Mr Lewis says this drawing
belongs in Folio 700
S. N. 609099

Div. 23 Room 379

2-200

Paper No. 9-764

All communications respecting this application should give the serial number, date of filing, and title of invention.

Address only
"The Commissioner of Patents,
Washington, D. C."
"P. O. Box 100"

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON

March 15, 1911

700
Thomas A. Edison,
Care Frank L. Dyer,
Orange, New Jersey.

Please find below a communication from the EXAMINER in charge of your application.

for Talking Machines, filed Feb. 17, 1911, serial number 609,099.

E. B. Moore

Commissioner of Patents.

This application has been duly examined.

Claims 1, 2 and 3 are rejected upon either Tainter, July 10, 1888, #385,887; Hoffman, Nov. 12, 1907, #870,961, or Milans, October 2, 1906, #832,403, all in (101-17).

Claims 4, 5 and 6 are rejected upon the cited art, in view of Valiquet, Jan. 17, 1906, #780,246, (181-3). No invention can be found in making the center post key spring pressed in view that a key spring pressed to retain the record upon the table is an old expedient in this art.

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON,)
TALKING MACHINES,)
Filed February 17, 1911,) Room No. 379.
Serial No. 609,099.)

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to Office action of March 15, 1911, please amend the above entitled case as follows:

Cancel claims 1, 2 and 3 and renumber claims 4, 5 and 6 as 1, 2 and 3.

Add the following as claim 4:

4. In a talking machine, the combination of a record support, a rotatable driving shaft secured to said support and forming at its upper end a bearing for the record, the said upper end of the shaft being provided with a recess, a key mounted in said recess and movable to a position entirely within the same, and a spring tending to force said key out of said recess and into engagement with the record, substantially as described.

R E M A R K S

None of the references of record discloses a key mounted in the driving shaft of the record support and means for forcing the said key into engagement with the record to lock the same against rotation with respect to said shaft. The Examiner states that "No invention can be found in making the center post key spring pressed in view that a key spring pressed to retain the record upon the table is an old expedient in this art", the last

part of this quotation evidently referring to the disclosure of the patent to Valiquet. Referring to the patent to Valiquet, the spring pressed pin disclosed therein is not mounted in the driving shaft, as called for by the claims, but is located a considerable distance to one side of the same. Such a construction is not only less simple than that set forth in the applicant's claims, but requires a specially formed record tablet having a recess or opening which must always be located a fixed distance from the center of the record. Because of expansion and contraction of the record due to temperature changes, the distance between the center of the record and the said recess or opening undergoes an appreciable change. It is not seen how Valiquet's construction could suggest that set forth in any of applicant's claims; and in view of the simplicity and obvious advantage of the latter construction over prior constructions, it is thought that the claims are patentable.

Now claim 4 distinguishes from the references of record for the reasons set forth above and also by specifying that the key is movable to a position entirely within the slot in the driving shaft. By reason of this construction, the applicant's locking means may be used with records with or without a slot leading from the center aperture and is, therefore, of general application. No such construction is either shown or suggested by the references of record.

Reconsideration and allowance are accordingly respectfully requested.

Respectfully submitted,

Orange, New Jersey,
February 24, 1912.

THOMAS A. EDISON,

By Frazer L. Rogers
his Attorney.

Div. --23-- Room ---379

2-260

Paper No. 104-1

Address only
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

J.H.D.-S.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON

March 27, 1912.

Thomas A. Edison, 700
Care Frank L. Dyer,
Orange, New Jersey.



Please find below a communication from the EXAMINER in charge of your application.

for Talking Machines, filed Feb. 17, 1911, serial number 609,099.

E. Ballou

Commissioner of Patents.

This action is responsive to the amendment filed Feb. 26,
1912.

All of the claims are rejected upon Hoffman of record or
Tainter, July 10, 1888, #385,886, (181-3), see 43, in view of
Sweet, Sept. 10, 1901, #882,507, (74-Gearing, Slidable Key.) Inven-
tion is not found in making the keys of Tainter or Hoffman spring
pressed in view of Sweet's structure. It is not seen that any
function has been obtained but what is obvious from the
employment of a spring pressed key in the talking machine
structure cited.

Patent Series
Patent Application Files

Folio # 715 Alternating Current Motor

U.S. Patent #: 1214883

Primary Applicant: Bliss, Donald M

Date Executed: 3/10/1911

Mr. Lankin

Mr. Edison:-

FOLIO 715 - application of Donald M. Bliss for
Alternating Current Motors

This application covers a combined induction and re-
pulsion motor designed to operate on a single phase circuit and
self-starting. I understand that we do not use this motor.
This application is one of a group of applications assigned to
Thomas A. Edison, Inc. which you decided to prosecute and make a
reasonable effort to secure the allowance of the claims because of
the agreement with Mr. Bliss. The interest of Mr. Bliss in this
application or a patent granted on it is that if the we sell the
application or patent, or grant a license, Mr. Bliss is entitled
to receive 25% of all moneys or other consideration received by us
from such sale or as royalties under such licenses.

We have been able to secure the allowance of the follow-
ing claims:-

1. An armature comprising a core of magnetic material
having openings located near the periphery thereof, a
squirrel cage system of conductors located in alternate
openings, and a commutated winding located in the remainder
of the openings, substantially as described.

2. An armature comprising a core of magnetic ma-
terial having two sets of alternately arranged axially
extending openings near the periphery thereof and substan-
tially equidistant therefrom, a closed circuited winding
in one of said sets of openings and a commutated winding
in the other of said sets, substantially as described.

4. An alternating current motor comprising a
stator and a rotor, one of said members being provided
with axially extending slots, and having a commutated
winding carried in said slots, and short circuited con-
ductors located between said slots, substantially as
described.

*There is no note
on the big package
what is about it*

*12, 1916
E
The big package
is made to
be made
in the
of Edison
715*

*Note note
page*

The following claims have been rejected:

3. In an alternating current motor, a rotor comprising a core of magnetic material, a completely closed-circuited squirrel cage winding and a commutated winding located near the periphery of the said core, each winding being uniformly distributed around the core and with portions of each winding between portions of the other winding, and a commutator and short circuited brushes for the commutated winding, substantially as described.

5. In an alternating current motor, a rotor comprising a core of magnetic material, a completely closed-circuited squirrel cage winding and a commutated winding, the active conductors of both being located near the periphery of the said core and substantially equidistant from the axis thereof, each winding being uniformly distributed around the core and the two windings being so related that substantially all of the flux threading any coil of the commutated winding threads also a closed-circuited portion of the squirrel cage winding, substantially as described.

These claims are rejected on the patent to Arnold No. 562,365, see particularly the diagrammatic shown in Fig. 4, the Examiner holding that the short circuited windings a' shown in this figure are the equivalent of the ^{closed} ~~closed~~ circuited squirrel cage winding employed in the Bliss motor and recited in the claims. While it is doubtful whether the Examiner is correct in this position, it would seem that the invention is a narrow one in view of the Arnold patent and the patent to Bretch No. 848,719, and that the Office has allowed us reasonably good claims. The question now is whether you wish an appeal taken against the final rejection of claims 3 and 5, or whether we shall cancel these claims and take out the patent.

BL-JS

*Don't want to appeal if we
are not using it*
Henry Canabait

*Mr. Langley appears, Mr. [unclear] [unclear]
not meeting this statement.*
7/13 Aug 18/1911

Donald M. Bliss

President of the Engineering Specialty Co.,
Stanford, Conn.

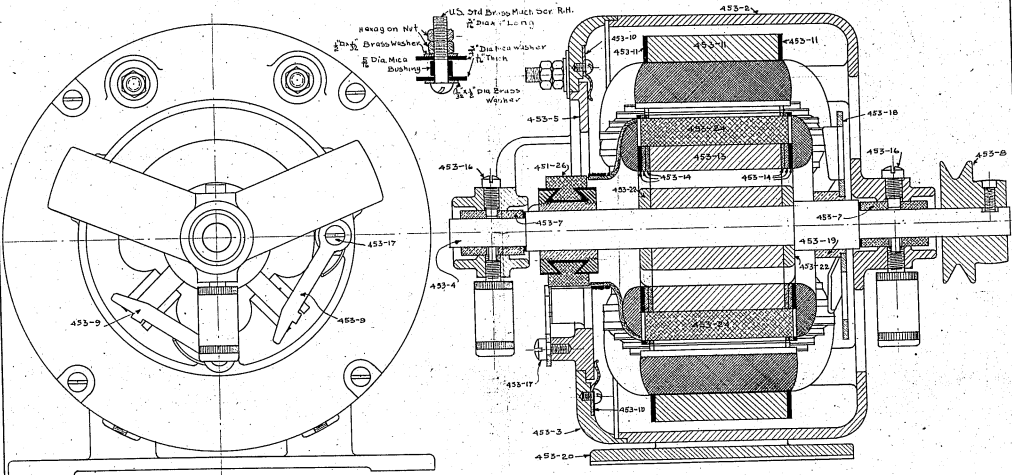
from Dec 1908 to Sept 1910.

Sam G. Langley

Electrical Engineer and Superintendent
during same period.

As early as Feb 1909, motor was made
by ~~I~~ under Langley's direction in
accordance with Bliss's instructions.

First documentary evidence is
test sheets of Aug 2, 1909 of one
of first motors sold. This motor
was delivered after Aug 2, 1909 to
Peterson + Peterson, of New York.



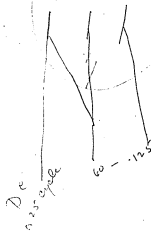
DRAWN BY H. G. G. G. CHECKED BY _____
 TRACED BY _____ APPROVED BY _____
 ORANGE, N.J.

DWG. 3-26-10

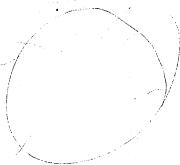
Received from O. M. Bliss, Dec 3, 1910.

Henry Laushman

Brush Shifting
2 Field Windings



609
125



Patent Series
Patent Application Files

Folio # 719 Sound-Box

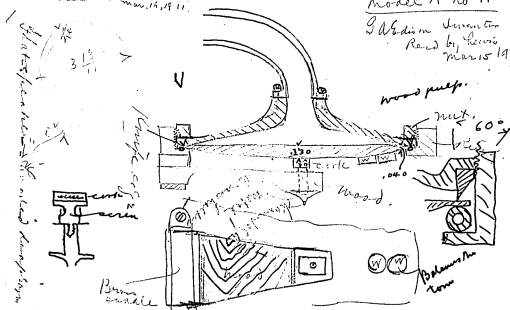
U.S. Patent #: 1204420

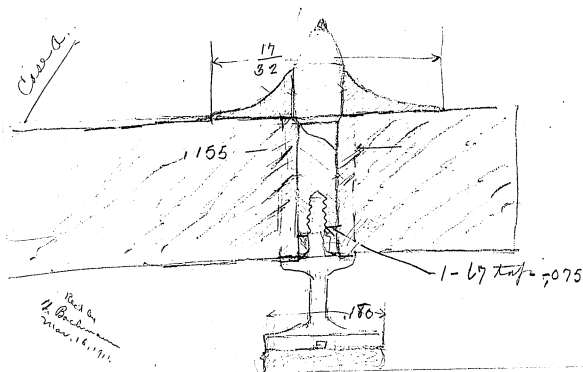
Primary Applicant: Edison, Thomas A

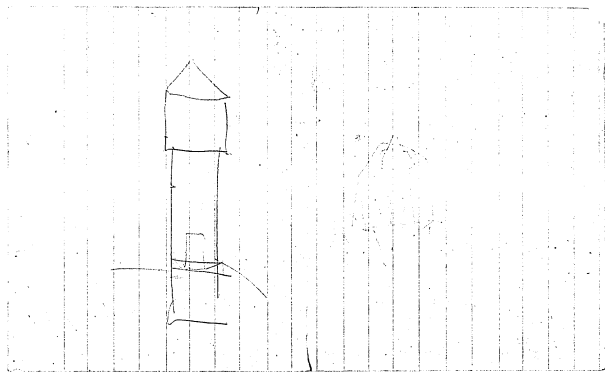
Date Executed: 3/22/1911

Model A No 11

LaGuardia Invention
Rec'd by Lewis
Mar 15 1911







Patent Series

Patent Application Files

Folio # 720 Sound Boxes

Serial #: 616756

Primary Applicant: Edison, Thomas A

Date Executed: 3/22/1911

Folio No. 720

Serial No. 616, 756

Applicant.

Address.

Thomas A. Edison

Title Sound Boxes (Base B)

Filed March 24, 1911

Examiner's Room No. _____

Assignee _____

Ass'g't Exec. _____

Recorded _____

Liber _____

Page _____

Patent No. _____

Issued _____

ACTIONS.

- | | | |
|----|--------------------------------|----|
| 1 | <u>Rejected April 25, 1911</u> | 16 |
| 2 | <u>Amended April 3, 1912</u> | 17 |
| 3 | <u>Rejected May 8, 1912</u> | 18 |
| 4 | <u>Amended April 15, 1913</u> | 19 |
| 5 | <u>Rejected May 12, 1913</u> | 20 |
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| 15 | | 30 |

FRANK L. DYER,

Counsel,

Orange, New Jersey.

2030 B.

Petition.

To the Commissioner of Patents:

Our Petitioner THOMAS A. EDISON,
a citizen of the United States, residing and having a Post Office address at
Llewellyn Park, West Orange, Essex County, New Jersey,

prays that letters patent may be granted to him for the improvements in

SOUND BOXES

set forth in the annexed specification; and he hereby appoints Frank L. Dyer
(Registration No. 560), of Orange, New Jersey, his attorney, with full
power of substitution and revocation, to prosecute this application, to make
alterations and amendments therein, to receive the patent, and to transact all
business in the Patent Office connected therewith.

*Thomas A. Edison*_____

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, in the County of Essex and State of New Jersey, have invented certain new and useful improvements in SOUND BOXES of which the following is a description:

My invention relates to sound boxes particularly of the type adapted for use in connection with disc records having vertically undulating grooves, although its use is not limited to that type. The principal object of my invention is to construct a reproducer giving an improved quality of reproduction by the elimination of minute scratch vibrations and by the reduction of the prominence of objectionable high or low notes. Another object of my invention is to provide a construction whereby the loudness of the reproduction is materially increased, and it is in this feature that the principal difference between the present invention and that disclosed in my application, Serial No. 616,745, filed *Nov. 28, 1914* exists. As in the last named invention I insert between the stylus arm and the diaphragm, a yielding non-metallic member of short elasticity preferably of cork, to absorb the scratch vibrations. In order to obtain a loud reproduction and at the same time to balance up the tone of the diaphragm, I connect the stylus arm with the diaphragm eccentrically of the latter, as will be more

fully explained in the following specification. I also prefer to make the stylus arm of wood or other suitable non-metallic substance so as to eliminate the characteristic "ring" or metallic sound which is produced when the common metallic stylus arm is set into vibration.

Other objects of my invention will appear more fully from the following specification and appended claims.

In order that my invention may be more clearly understood, attention is hereby directed to the accompanying drawing forming a part of this specification and illustrating a preferred form of my invention.

In the drawing,

Figure 1 represents a central vertical section through a sound reproducer embodying my invention;

Figure 2 represents a bottom plan view thereof; and

Figure 3 represents a diagrammatic view showing how the tone of the diaphragm is balanced by my improved construction.

In all the views, like parts are designated by the same reference numerals.

Referring to the drawings, the body of the reproducer is formed in any suitable manner as by the flat metallic, conical member 1 having secured thereto a hollow neck 2, bent substantially at a right angle, the flanged annulus 3, and the threaded ring 4 screwed into the annulus 3 to position and hold the members as shown. The diaphragm 5 is preferably secured between an annular gasket 6 of circular cross section and a ring 7 preferably of steel formed with a knife edge, as shown,

which is positioned to contact the edge of the diaphragm in a circular line opposite the centre of the annular gasket 6. By reason of this construction, the diaphragm is permitted to bend on the gasket 6 and ring 7 without buckling. I preferably form the diaphragm 5 of wood pulp board making the inner face thereof plane and the outer face thereof, except for a short distance from the periphery, convex; so that the diaphragm has substantially the form of a segment of a sphere. This form gives to the diaphragm increased rigidity towards the centre and eliminates objectionable local vibration.

^{4/13/36} The stylus arm 8 ^{non-metallic material, such as wood} which is preferably made of wood, is rigidly secured to the member 3 by a bracket or saddle 9 held in place on the horizontal flange 3' of the member 3 by screws or other fastening means 10. A strip 11 of metal or other suitable material is interposed between the stylus arm and the flange 3' so as to space the said arm a proper distance from the diaphragm and is held in place by the bracket 9.

The stylus arm 8 extends substantially parallel to the diaphragm, and, at its outer end, which extends some distance beyond the centre of the diaphragm, supports a member 12 between which and the diaphragm is interposed a piece 13 of cork or other yielding non-metallic material of short elasticity. The cork 13 is preferably secured by shellac or other suitable adhesive to the member 12 and the diaphragm. The stylus 14, which is preferably a diamond, is mounted in a holder 15 which is provided with a shank 16, secured in any suitable way to the stylus arm, preferably in a position to locate the stylus 14 substantially under the centre of the diaphragm. The stylus

arm being connected to the diaphragm ^{at a point} eccentrically of the latter, the distance from the point of application of the forces tending to vibrate the diaphragm to the various points on the periphery of the diaphragm varies as shown in Figure 3. The result of this construction is that the diaphragm is not in tune with any particular note and that, therefore, a well balanced tone is obtained. Furthermore, by reason of the connection of the stylus arm to the diaphragm eccentrically of the latter, the movements of the centre of the diaphragm are magnified as will be evident; so that a reproduction of increased loudness is obtained. The magnification of the vibrations of the diaphragm may also be increased by locating the stylus 14 intermediate the connection 12, 13 and the fixed end of the arm 8, as shown. By reason of the employment of the cork insert 13, a large amount of minute scratch vibrations ordinarily emitted when the stylus is tracking a record are absorbed; and by making the arm 8 of wood the objectionable "ring" which is emitted by the common form of metallic stylus arm during its vibration is eliminated.

In order to make the arm 8 resilient in the direction of the movement of the stylus 14, that is, at right angles to the record surface, the lower surface thereof is preferably concaved intermediate its ends as shown at 17 so that the cross section of the intermediate portion of the arm is materially decreased. With this construction the stylus is held firmly in contact with the record groove so that the record is faithfully reproduced. As shown in Figure 2, the stylus arm is preferably wedge

shaped in horizontal section, the broader end of the arm being secured to the member 3, so that the stylus is held rigidly against movements transverse to the record groove. This feature also adds to the correctness and quality of the reproduction.

While I have shown the preferred embodiment of my invention, it is evident that many modifications may be made in the structure disclosed without departing from the spirit of my invention.

What I claim as new and desire to protect by Letters Patent of the United States is as follows:

- controlled stylus - direct A - claim 1-2*
1. In a device of the class described, the combination with a diaphragm and a support therefor, of a stylus arm connected with said diaphragm eccentrically thereof, substantially as described.
 2. In a device of the class described, the combination with a diaphragm and a support therefor, of a stylus arm secured to said support and connected with said diaphragm eccentrically thereof, and a stylus mounted in said arm opposite the centre of said diaphragm, substantially as described.
 3. In a device of the class described, the combination with a diaphragm and a support therefor, of a flexible stylus arm rigidly secured to said support and connected with said diaphragm eccentrically thereof, substantially as described.
 4. In a device of the class described, the combination with a diaphragm and a support therefor, of a flexible stylus arm rigidly secured to said support and

~~Cancelled 4/2/12~~
connected with said diaphragm eccentrically thereof, and a stylus mounted in said arm opposite the centre of said diaphragm, substantially as described.

5. In a device of the class described, the combination with a diaphragm and a support therefor, of a stylus arm, and a yielding non-metallic member interposed between said arm and said diaphragm at a position eccentrically of said diaphragm, substantially as described.

~~Cancelled 4/25/12~~
6. In a device of the class described, the combination with a diaphragm and a support therefor, of a flexible stylus arm, rigidly secured to said support, and a yielding non-metallic member interposed between said arm and said diaphragm at a position eccentrically of said diaphragm, substantially as described.

~~Cancelled 4/2/12~~
7. In a device of the class described, the combination with a diaphragm and a support therefor, of a stylus arm rigidly secured to said support adjacent the periphery of said diaphragm and connected with said diaphragm eccentrically thereof, the said arm being of reduced cross section intermediate its ends, substantially as described.

8. In a device of the class described, the combination with a diaphragm and a support therefor, of a non-metallic stylus arm rigidly secured to said support adjacent the periphery of said diaphragm and connected with said diaphragm eccentrically thereof, the said arm being of reduced cross section intermediate its ends, substantially as described.

Cancelled 4/18/13
9. In a device of the class described, the combination with a diaphragm, and a support therefor, of a stylus arm rigidly secured to said support adjacent the periphery of said diaphragm, the said arm being of reduced cross section intermediate its ends and a yielding non-metallic member interposed between said arm and said diaphragm at a position eccentrically of said diaphragm, substantially as described.

10. In a device of the class described, the combination with a diaphragm, and a support therefor, of a stylus arm rigidly secured to said support adjacent the periphery of said diaphragm, the said arm being of reduced cross section intermediate its ends, a yielding non-metallic member interposed between said arm and said diaphragm at a position eccentrically of said diaphragm, and a stylus mounted in said arm opposite the centre of said diaphragm, substantially as described.

Cancelled 4/18/13
11. In a device of the class described, the combination with a diaphragm and a support therefor, of a stylus arm of gradually increasing width in a direction transverse to the record groove, the said arm being secured at its broad end to said support and connected near its other end with said diaphragm, substantially as described.

Insert B- April 15, 13 - Claim 1-7

This specification signed and witnessed this 22nd day of March 1911

Thomas A. Edison

Witnesseth:

1. Judith Bachman

2. Anna P. Klehm

Oath.

State of New Jersey } ss.,
County of Essex }

THOMAS A. EDISON, the above named
petitioner, being duly sworn, deposes and says that he is a citizen of the United
States, and a resident of Llewellyn Park, West Orange, Essex County,
New Jersey,

that he verily believes himself to be the original, first and sole inventor of the
improvements in SOUND BOXES

described and claimed in the annexed specification; that he does not know and
does not believe that the same was ever known or used before his invention or
discovery thereof; or patented or described in any printed publication in the
United States of America or any foreign country before his invention or
discovery thereof, or more than two years prior to this application; or patented
in any country foreign to the United States on an application filed more than
twelve months prior to this application; or in public use or on sale in the
United States for more than two years prior to this application; and that no
application for patent upon said invention has been filed by him or his legal
representatives or assigns in any foreign country.

Thomas A. Edison

Sworn to and subscribed before me this 22nd day of March 1911

Anna P. Klehm

[Seal]

Notary Public.

616756

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18

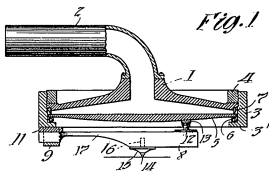


Fig. 1

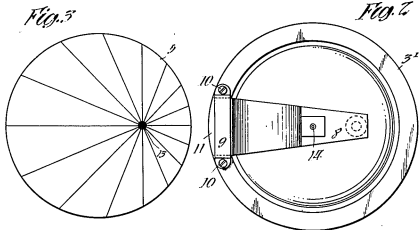


Fig. 2

Fig. 3

Witnesses:
 Frank D. Lewis
 Frederick Bachman.

Inventor:
 Thomas A. Edison
 by Henry C. Ho
 his Atty.

720
Div. 23 Room 379

2-200

Address only
"The Commissioner of Patents,
Washington, D. C."
J. P. D. - 2.

Paper No. 2, P. 4.
All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

April 25, 1911.

Thomas A. Edison,
Care - Frank L. Dyer,
Oranget, New Jersey.

Please find below a communication from the **EXAMINER** in charge of your application.
for Sound Boxes, filed March 24, 1911, serial number 616,756.

E. B. Moore

Commissioner of Patents.

The blanks left on page 1 should be filled in with the
proper serial number and date.

Claim 1 is rejected upon any of the following references:

Hart, May 5, 1903, #727,357;

Weber, May 23, 1905, #790,542, ✓

Hibbard, Oct. 17, 1905, #802,212, all in (121-10), also see

Moyer, Sept. 25, 1900, #658,571, and

Horocross, June 11, 1901, #676,270, both in (121-10).

No invention can be found in extending the stylus arm of either
Edison, Feb. 22, 1910, #950,226, or Edison, June 21, 1910, #962,061,
both in (121-10), or Chisholm, March 10, 1908, #561,546, (121-10), so
as to attach it eccentrically to the diaphragm as in the references
cited, leaving the stylus intermediate the ends of the stylus arm,
a construction very common in this art as see Macdonald, May 2, 1899,
#624,059, (121-10) and accordingly claims 2, 3, and 4 are rejected.

Claim 5 is rejected upon the reasons of rejection of
claim 1, in view of Edison, Feb. 5, 1899, #397,200, (121-10), as
showing the cork attaching means.

Claim 6 is rejected upon the reasons of rejection of
claims 2 to 4, in view of Edison, last cited.

Claims 7 and 8 are rejected upon the reasons of rejection

#616,756-----2.

of claim 2, in view of Randall, Aug. 1, 1893, #502,383, (181-8),
as showing the stylus arm of reduced cross section intermediate
its ends.

Claims 9 and 10 are rejected upon the reasons of
rejection of claim 2, in view of Edison, last cited and Randall.
No invention can be found in combining these features in one sound
box.

Claim 11 is rejected upon Hart, June 5, 1900, #651,308,
or Edison, #962,081, cited, both in (181-10).

IN THE UNITED STATES PATENT OFFICE.

Thomas A. Edison)	
SOUND BOXES)	
Filed March 24, 1911)	Room No. 370
Serial No. 616,756)	

HONORABLE COMMISSIONER OF PATENTS,

S I R:

Replying to Office action of April 25, 1911, please amend the above entitled case as follows:

In line 20, page 1, after "No." insert - 616,756; and at the beginning of line 21, same page, insert-March 24, 1911-.

In line 1, page 4, after "diaphragm", insert - at a point -; and in line 13, same page, change "may" to - is -, and cancel "be".

Cancel claims 1, 2, 3, 4, 5, 7, 8, and 11, and change the numerals of claims 6, 9, and 10 to - 9, 10, and 11 - respectively.

Add the following as claims 1 to 6, inclusive:

Amended 4/24/12
1. In a device of the class described, the combination of a sound box body, a single diaphragm mounted therein, a stylus, and means for transmitting the movements of the said stylus to said diaphragm, said means bearing upon said diaphragm substantially at a single point eccentrically of said diaphragm, substantially as described.

2 In a device of the class described, the combination of a sound box body, a single diaphragm mounted therein, and a stylus arm connected with said diaphragm

Cancelled 4/10/13

substantially at a single point eccentrically of said diaphragm, substantially as described.

3. In a device of the class described, the combination of a sound box body, a single diaphragm mounted therein, and a flexible stylus arm secured to said body and connected with said diaphragm substantially at a single point eccentrically of said diaphragm, substantially as described.

4. In a device of the class described, the combination of a sound box body, a single diaphragm mounted therein, a stylus arm connected with said diaphragm substantially at a single point eccentrically of said diaphragm, and a stylus mounted in said arm opposite the centre of said diaphragm, substantially as described.

a
5. In a device of the class described, the combination of a sound box body, a single diaphragm mounted therein, a stylus arm secured to said body, and yielding means interposed between said arm and said diaphragm and bearing upon said diaphragm substantially at a single point eccentrically thereof, substantially as described.

6. In a device of the class described, the combination of a sound box body, a single diaphragm mounted therein, and a non-metallic stylus arm connected with said diaphragm substantially at a single point eccentrically of said diaphragm, substantially as described.

7. In a device of the class described, the combination of a sound box body, a single diaphragm mounted therein, a non-metallic stylus arm secured to said body, and yielding means interposed between said arm and said diaphragm and bearing upon said diaphragm substantially

at a single point eccentrically thereof, substantially as described.

2 8. In a device of the class described, the combination of a sound box body, a single diaphragm mounted therein, a flexible non-metallic stylus arm secured to said body, and yielding means interposed between said arm and said diaphragm and bearing upon said diaphragm substantially at a single point eccentrically thereof, substantially as described. -

REMARKS

None of the references of record shows a sound box having a single diaphragm mounted therein and means bearing upon or connected with the diaphragm substantially at a single point eccentrically thereof for transmitting the movements of the stylus to the diaphragm. In the disclosure of Hart there is a total absence of applicant's inventive conception of applying the connections between the stylus lever and the diaphragm to such a point on the diaphragm as to throw the diaphragm out of tune with particular notes. Hart's object was to produce a reproducer having a plurality of diaphragms and a stylus for each diaphragm, and in order to connect each stylus with its diaphragm, he employs a number of connections, some of which he must put slightly off the centre. Obviously, Hart intended to place the connections 21^a and 22^a as near the centre of the diaphragm as possible, and these connections are, in fact, shown very near the centres of the diaphragms. Claims 1 to 8 structurally differentiate from the patent to Hart by specifying a sound box body and a single diaphragm mounted therein. With the com-

bined arrangement of the diaphragms disclosed by Hart, the acoustic ~~was~~^{effect} of a device like that set forth in the claims could not be obtained. The maximum effect in reproduction obtained from the various diaphragms in Hart's device is that of the upper diaphragm which has its stylus connection located at its centre, and is therefore subject to the objections which it was applicant's object to obviate. The quality of the sound waves resulting from the three diaphragms in Hart's reproducer would accordingly be inferior to that of the reproduction from applicant's device. Furthermore, it is pointed out that with Hart's plurality of styluses, it would be impossible to obtain perfectly synchronous vibration in all the diaphragms; so that the vibrations of one diaphragm would interfere with those of the others, and an imperfect reproduction would result. The patents to Weber and Hibbard do not show the stylus arm applied to the diaphragm substantially at a single point.

In the structure of Moyer, a rigid conical body C is employed in place of a stylus lever. This conical body vibrates about the edge thereof adjacent the periphery of the diaphragm as a fulcrum and imparts the maximum vibration to the diaphragm substantially at the centre thereof. A large part of the diaphragm is held rigid, and the vibration thereof is obviously essentially different from that produced when the connections from the stylus are applied to the diaphragm "substantially at a single point eccentrically of said diaphragm".

The structure of Morcross is similar to that of Moyer, and fails to anticipate applicant's structure for the same reasons as does Moyer's.

No other references of record disclose a stylus connected to the diaphragm eccentrically thereof; and claims 1 to 8 are accordingly thought to be patentable.

Referring to claims 9, 10, and 11, none of the references discloses a stylus arm rigidly secured to the diaphragm support, and a yielding non-metallic member interposed between said arm and diaphragm. In addition to absorbing the minute scratching vibrations, this yielding member in applicant's device permits a slight variation between the relative angular positions of the portions of the stylus arm and diaphragm between which it is interposed without danger of breaking the connection between these parts. This yielding member is, therefore, used in a relation very different from that of the cork piece A shown in the patent to Edison, No. 397,390, in which patent the stylus arm instead of being connected to the sound box body, is pivotally supported on said cork piece. Furthermore, none of the references shows a stylus arm rigidly secured to the diaphragm support and operating upon the diaphragm at a position eccentrically of the latter. Claim 11 also distinguishes from the references by specifying that the stylus is opposite the centre of the diaphragm while the stylus arm is connected with the diaphragm eccentrically thereof.

None of the references discloses applicant's invention nor any equivalent combination, and it is submitted that the assembling and modification of various elements from the references of record to produce applicant's invention, as set forth in the claims in question, could not be accomplished without a knowledge of applicant's disclosure or the exercise of the invention.

Reconsideration and allowance are accordingly
respectfully requested.

THOMAS A. EDISON

By

Paul L. Opper

his Attorney.

Orange, New Jersey

April 3, 1912

Div. 23 Room 379

2-200

Address only
"The Commissioner of Patents,
Washington, D. C."
J. H. D. - 5.

Paper No. 4, Rej. 1.

At communications respecting this
Application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

May 8, 1912.

Thomas A. Edison,
Care Frank L. Dyer,
Orange, New Jersey.

U. S. PATENT OFFICE,
MAY 8 1912
MAILED.

Please find below a communication from the EXAMINER in charge of your application.
for Sound Boxes, filed March 24, 1911, serial number 616,756.

E. B. Moore

Commissioner of Patents.

This action is responsive to the amendment filed April 4,
1912.

Claims 1 and 2 are rejected upon Williams, March 21, 1911,
#987,205, (181-11); Tainter, May 4, 1886, #341,288, (181-2), see
Figure 11 and also as displaying no invention over Hart of
record. Invention is not found in employing only one of
Hart's diaphragms with the stylus bar connection disclosed.

Claim 3 is rejected upon any of the above cited references.
Invention is not found in making the stylus arm flexible as
such as a well known construction as see Murray, July 16, 1907,
#860,604, (181-11); Edison, #962,081 of record; Edison, #950,226
of record; Jones, April 19, 1898, #602,453, (181-11); Randall of record
or Lumiere Eng. patent, Nov. 16, 1909, #26,613, (181-11).

Claim 4 is rejected upon Tainter, cited, also as
displaying no invention over the art disclosed, no invention being
found in connecting the stylus arm of Macdonald of record
eccentrically with respect to the diaphragm with the stylus
opposite the center, in view of Tainter's disclosure or Williams
disclosure.

Claim 5 is rejected upon Tainter; also upon Hart or Williams
in view of any construction showing the interposition of yielding

#616,756-----2.

means between the stylus arm and the diaphragm. Such as shown for example in Jones, May 31, 1898, #604,829, (181-3); Berliner, Feb. 19, 1895, #534,543, (181-3); Berliner, July 28, 1896, #564,566, (181-3); Kraemer, April 21, 1908, #885,490; Cheney, April 7, 1903, #724,435, both in (181-11); Hill, Feb. 19, 1901, #668,183, (181-10), or Edison, #397,280, of record.

Claim 6 is rejected upon the references cited against claim 1, in view of any wooden stylus arm as in the two Edison references first cited on the disclosure by W. B. Stout in an article entitled "How to Make a Gramophone" in the Scientific American of April 27, 1901.

Claims 7 and 8 are rejected upon the references and reasons of rejection of claim 6 in view of the references cited against claim 5 as showing the yielding means interposed.

Claims 9, 10 and 11 are ^{rejected} upon the references cited against claim 1, in view of any of the references showing flexible arms and any of the references showing interposed non metallic members .

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON,)
SOUND BOXES,) Room No. 379.
Filed March 24, 1911.)
Serial No. 616,756.)

HONORABLE COMMISSIONER OF PATENTS.

S I R:

In response to the Office action of May 8, 1912, please amend the above entitled case as follows:

In line 12, page 3, after "of" insert - non-metallic material, such as - ; and in line 13, same page, after "wood" insert a comma (,) .

Cancel all of the claims and insert the following new claims:

B
1. In a device of the class described, the combination of a diaphragm, a stylus arm connected with said diaphragm at a position eccentrically of the diaphragm, and means connecting with said arm at a second position to support the same, said arm being provided with stylus supporting means intermediate said positions, substantially as described.

2. In a device of the class described, the combination of a sound box body, a diaphragm mounted therein, and a stylus arm supported by said sound box body at a given position and connected with said diaphragm at a second position eccentrically of the diaphragm, said arm being provided with stylus supporting means intermediate said positions, substantially as described.

3. In a device of the class described, the combination of a sound box body, a diaphragm mounted therein, and a yielding stylus arm rigidly secured to said sound box body at a given position and connected with said diaphragm at a second position eccentrically of the diaphragm, said arm being provided with stylus supporting means intermediate said positions, substantially as described.

4. In a device of the class described, the combination of a diaphragm, a non-metallic stylus arm connected with said diaphragm at a position eccentrically of the diaphragm, and means coacting with said arm at a second position to support the same, said arm being provided with stylus supporting means intermediate said positions, substantially as described.

5. In a device of the class described, the combination of a diaphragm, a stylus arm having a yielding connection with said diaphragm at a position eccentrically of the diaphragm, and means coacting with said arm at a second position to support the same, said arm being provided with stylus supporting means intermediate said positions, substantially as described.

6. In a device of the class described, the combination of a diaphragm, a stylus arm connected with said diaphragm at a position eccentrically of the diaphragm, and means coacting with said arm at a second position to support the same, said arm being provided with stylus supporting means intermediate said positions and substantially opposite the center of said diaphragm, substantially as described.

B

7. In a device of the class described, the combination of a sound box body, a diaphragm mounted therein, and a yielding stylus arm rigidly secured to said sound box body at a given position and connected with said diaphragm at a second position eccentrically of the diaphragm, said arm being provided with stylus supporting means intermediate said positions and substantially opposite the center of said diaphragm, substantially as described.

REMARKS

Some of the rejected claims are thought not to have been anticipated by the references of record, but an entirely new set of claims is presented herewith in order to more clearly define the patentable features of applicant's invention. All of the claims as now presented differentiate from the references by specifying that the stylus arm is eccentrically connected with the diaphragm and is provided with stylus supporting means intermediate the positions at which it is supported and connected with the diaphragm. With this construction improved results have been obtained by the applicant in the reduction of the prominence of objectionable high and low notes and in the increase of the loudness of the reproduction. For a statement of the advantages of the combinations set forth in the claims, the Examiner's attention is directed to page 4 of the specification.

Applicant has produced an improved device not

disclosed or suggested by the references and reconsideration
and allowance are accordingly respectfully requested.

Respectfully submitted,

THOMAS A. EDISON,

By Frank L. Dyer
his attorney.

Orange, New Jersey,

April 15, 1913.

Div. 23 Room 370
Address only
"The Commissioner of Patents,
Washington, D. C."
J.H.D.-Sut.

2-260

Paper No. Ref.
All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

May 12, 1913.

Frank L. Dyer,
Orange, New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, serial number 616,756, filed March 24, 1911,
for Sound Boxes.

4-6-201

E. B. Moore
Commissioner of Patents.

This action is responsive to the amendment filed April 16,
1913.

Claims 1 and 2 are rejected on Obelt, English patent,
Jan. 29, 1897, #2430, (181-10).

As it is shown old to connect the stylus arm eccentrically
to the diaphragm in references of record as, for example,
Tainter, #341,288, or Hibbard, #802,212, or Williams, no invention
is found in so connecting the stylus arm in any of the sound
boxes cited of record employing the type of arm illustrated
in Macdonald, #624,059 of record; also no invention is found in
substituting such type of arm as illustrated in Macdonald
in any of the first group of references. Accordingly, claims 1
and 2 are additionally rejected for such reasons.

Claim 3 is rejected on the references and reasons above
given. The flexible arm rigidly held at one end is shown in
Tainter as well as in other references of record as Randall.

Claim 4 is rejected on the references and reasons cited
against claim 1. No invention is found in making the arm of
wood as such is shown in the references of record as Edison,
#962,081.

#616,756-----2.

Claim 5 is rejected on the references and reasons of rejection of claim 1. No invention is found in providing the yielding connection with the diaphragm as such is shown common in references of record as Tainter, above cited.

Claim 6 is rejected on Obelt, also on Tainter or Hibbard, it not being seen as patentably material on which side of the center of the diaphragm the arm is attached. The result described by applicant would seem to be the same.

Claim 7 is rejected on the references and reasons last given in view of the considerations fully set out above.

Patent Series

Patent Application Files

Folio # 721 Phonographic Telegraphs

Serial #: 616757

Primary Applicant: Edison, Thomas A

Date Executed: 3/22/1911

Folio No. 721

Serial No. 616,757

Applicant.

Address.

Thomas A. Edison

Title Photographic Telegraphs

Filed March 24, 1911

Examiner's Room No. 109

Assignee

Ass'g't Exec.

Recorded

Liber

Page

Patent No. Abandoned Issued June 2, 1917

ACTIONS.

- 1 Rejected May 29, 1911. 16
- 2 Amended May 9, 1912. 17
- 3 Rejected June 17, 1912. 18
- 4 Amended May 23, 1913. 10
- 5 Rejected August 28, 1913. 20
- 6 Amended July 27, 1914. 21
- 7 Rejected Sept. 21, 1914. 22
- 8 Amended September 9, 1915. 23
- 9 Rejected Oct. 12, 1915. 24
- 10 Amended May 29, 1916. 25
- 11 Final Rejection June 12, 1916. 26
- 12 27
- 13 28
- 14 29
- 15 30

FRANK L. DYER,

Counsel,

Orange, New Jersey.

Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON
a citizen of the United States, residing and having a Post Office address at
Llewellyn Park, West Orange, Essex County, New Jersey

prays that letters patent may be granted to him for the improvements in

- PHONOGRAPHIC TELEGRAPHS -

set forth in the annexed specification; and he hereby appoints Frank L. Dyer
(Registration No. 560), of Orange, New Jersey, his attorney, with full
power of substitution and revocation, to prosecute this application, to make
alterations and amendments therein, to receive the patent, and to transact all
business in the Patent Office connected therewith.

Thomas A Edison

S P E C I F I C A T I O N .

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, in the County of Essex and State of New Jersey, have invented certain new and useful improvements in PHONOGRAPHIC TELEGRAPHS of which the following is a description:

My invention relates to the transmission of messages to distant points, and has for its object the provision of an improved method and means whereby such messages may be transmitted at a high speed.

My invention is particularly applicable to telegraph and similar systems where, because of the limited speed at which an operator is able to receive the message, the capacity of the line is restricted. In conformity with my object, I provide means whereby a record of the message may be made at a high speed at the receiving station, and then reproduced at any desired slower speed. In the particular embodiment of my invention shown and described herein, I transmit the message telegraphically to the distant station, where the electric pulsations transmitted along the line are transformed into mechanical pulsations, which latter are recorded upon a phonograph record blank. With this construction, it is possible to transmit the characters representing the message along the

line and to record the same on the record blank at as high a speed as 300 words per minute. The resultant record may at any time be reproduced at a speed permitting the operator to easily understand the same.

In order that my invention may be better understood, attention is hereby directed to the accompanying drawing, forming a part of this specification, and showing a diagrammatic view of a telegraph system embodying my invention.

Referring to the drawing, 1 represents the main line which is supplied with current from a generator or any other suitable source 2 and is grounded at the transmitting and receiving ends, as at 3 and 4 respectively. The numeral 5 represents a transmitter, comprising a metal cylinder 6 rotated by any suitable means (not shown) and a contact brush 7 adapted to engage the periphery of the cylinder. As shown in the drawing, the current of the main line is supplied to the cylinder 6 by a brush 8 engaging the shaft 9 of the cylinder. A non-conducting tape 10 having perforations therein corresponding to the characters representing the message to be sent is fed over the cylinder 6 past the brush 7; so that when the said brush engages the cylinder through the perforations in the tape, pulsations are thereby set up in the main line corresponding to the message to be sent. Any other preferred transmitter may be substituted for that shown and described above.

7-27/14
The receiving instrument preferably employed by me comprises a diaphragm 11 secured to any suitable

support 12 and adapted to transform the electrical pulsations from the sending station into corresponding mechanical pulsations or vibrations and to transmit them to a stylus 13 whereby they are recorded upon a rotating record cylinder of wax-like material 14. The stylus 13 is mounted in a lever 14' pivoted to a floating weight 15 which is pivoted to the support 12, so that it is held in engagement with the cylinder 14 with a substantially uniform pressure regardless of any unevenness or eccentricity in the surface of the cylinder. An electromagnet 16 having a core 17 is placed in the main line circuit at the receiving station and is adapted to vibrate the diaphragm 11 in accordance with the current pulsations in the said circuit. A permanent magnet 18 is secured to the core of the electromagnet and tends to hold the diaphragm in its normal position. In order to sharpen the record, I place a condenser 19 in the main line circuit at the receiving end to prevent continuous leakage of currents from stressing the diaphragm of the receiving instrument.

I have found that the sharpness of the record is materially increased by the provision of an auxiliary circuit ^{of the nature of inductance, such as} containing a magnet 21 and a resistance 22 to regulate the current. This circuit, as shown, is connected with the main line circuit in advance of the generator 2 and also beyond the transmitter. The resistance 22 as shown preferably comprises two lamps connected in multiple and placed in the auxiliary circuit. These lamps balance the current flowing through the coil 21 by taking up more or less of the current according to the variations therein. The arrangement described above is such that when the arm 7 is engaged with the cylinder 6, the current

having passed through the transmitter passes part to the main line and part to the auxiliary circuit; so that when the circuit is broken by the transmitter, the reverse current from the auxiliary circuit neutralizes the static charge in the main circuit, and the vibrations imparted to the diaphragm are sharp and distinct.

In operating the apparatus described above, it is possible to secure a clear and distinct record upon the cylinder 14 even though the apparatus be worked at a very high speed; so that the line has a very high capacity. After the record has been made, it may be reproduced at any desired speed preferably by placing the record cylinder on an auxiliary phonograph (not shown) provided for that purpose.

It is to be understood that my invention is not limited to the specific embodiment described above, but that it includes all the modifications falling within the scope of the appended claims.

Having now described my invention, what I claim as new and desire to secure by Letters Patent of the United States is as follows:

1. The method of, ^{rapid telegraphy 7/21/14} transmitting messages which consists in transmitting ~~corresponding~~ ^{the vibrations of the message} pulsations or vibrations to the receiving station at a high speed, recording the said pulsations at the receiving station, and ^{phonographically 5/22/13} reproducing the same from the ^{resultant 5/22/13} record by ^{generally 7/22/13} operating the record at a reduced speed, substantially as described.

^{Cancelled 6/23/13}
2. The method of transmitting messages which consists in transmitting ~~corresponding~~ ^{the vibrations of the message} electrical pulsations

1/2/42
strip along the character of the message
to the receiving station at a high speed, transforming the electrical into mechanical pulsations at the receiving station, ^{the strip} impressing or recording the last named pulsations upon a suitable blank, and reproducing the same from the resultant record at a ^{greater} reduced speed, substantially as described.

2. 3. The method of ^{radio telegraphy 7/27/42} transmitting messages which consists in providing a strip with perforations corresponding to the characters ^{a message or messages 7/27/42} representing the message to be sent, transmitting electrical pulsations corresponding to the said perforations to the receiving station at a high speed, transforming the electrical into mechanical pulsations, ^{these characters 7/27/42} impressing or recording the last named pulsations upon a suitable blank and ^{the message 7/27/42} reproducing the same from the resultant record at a ^{greater} reduced speed, substantially as described. *United States Pat. 2,411,111*

Cancelled 7/27/42
4. In a device of the class described, a circuit containing a source of current supply, a transmitter, a phonographic receiver, and means located in proximity to said receiver for preventing leakage of current thereto when the circuit is broken by said transmitter, substantially as described.

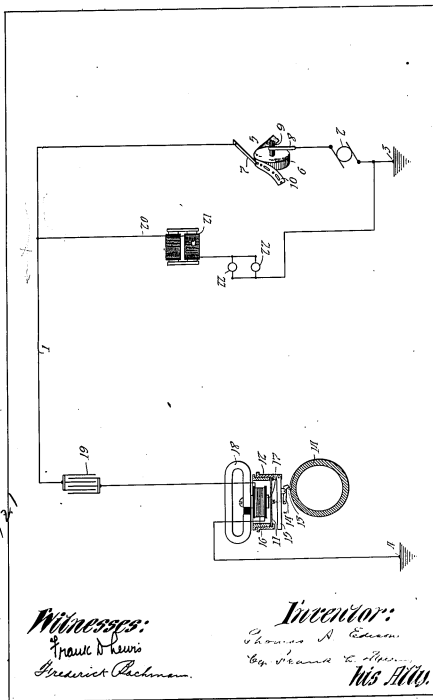
5. In a device of the class described, a circuit containing a source of current supply, and a transmitter, a phonographic receiver, and a condenser, the said condenser being located in said circuit intermediate said transmitter and receiver and in proximity to said receiver, substantially as described.

Amended 1/12
6. In a device of the class described, a main circuit containing a source of current supply, a transmitter and a phonographic receiver, and an auxiliary circuit provided with inductive resistance connected with said main circuit and adapted to neutralize the static charge in the main circuit when the latter is broken by the transmitter, substantially as described.

7. In a device of the class described, a circuit containing a source of current supply, a transmitter and a phonographic receiver and a magnet shunted about said source of current supply and said transmitter, substantially as described.

8. In a device of the class described, a circuit containing a source of current supply, a transmitter, a phonographic receiver, and a condenser, the said condenser being located in said circuit intermediate said transmitter and receiver, and a magnet shunted about said source of current supply and said transmitter, substantially as described.

616 107



This specification signed and witnessed this 22nd day of March 1911

Thomas A Edison

Witnesseth:

1. Frederick Bachman

2. Anna P. Klehm

Oath.

State of New Jersey } ss.,
County of Essex

THOMAS A. EDISON, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of Llewellyn Park, West Orange, Essex county, New Jersey.

that he verily believes himself to be the original, first and sole inventor of the improvements in PHOTOGRAPHIC TELEGRAPHS

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

Thomas A Edison

Sworn to and subscribed before me this 22nd day of March 1911

Anna P. Klehm

[Seal]

Notary Public.

DIV. XV. Room 109

Address only
"The Commissioner of Patents,
Washington, D. C."

2-200

P.N.

Paper No. 2.

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

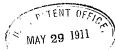
DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON May 29, 1911.

Thomas A. Edison,

C/o F. L. Dyer,

Orange, New Jersey.



Please find below a communication from the *EXAMINER* in charge of your application.

S. No. 616,757, filed Mar. 24, 1911, Phonographic Telegraphs.

E. B. Moore

Commissioner of Patents.

This application has been examined.

Claims 1 and 2 are rejected on patent to Kumborg,
636,209, Oct. 31, 1899, 179 - 6.

Claims 3, 4 and 5 are rejected on patent to Taylor,
289,173, Nov. 27, 1883, 178 - Automatic, in view of
Kumborg. It is considered no invention to use the phono-
graphic receiver of Kumborg in the telegraphic system of
Taylor.

Claims 6, 7 and 8 are rejected on patents to Taylor
and Kumborg, cited, in view of Edison, 147,313, Feb. 10,
1874, 178 - Automatic. In this patent to Edison it is seen
to be old to place inductance and resistance in shunt around
the transmitter.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

PHONOGRAPHIC TELEGRAPHS

Filed March 24, 1911

Serial No. 616,757

Room No. 109.

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of May 29, 1911, please amend the above entitled case as follows:-

Page 3, line 23, after "containing" insert - a source of inductance, such as - .

Claim 1, line 2, erase "corresponding"; and in line 3, before "to" insert - corresponding to the characters of the messages - .

Claim 2, line 2, erase "corresponding"; and after "pulsations" insert - corresponding to the characters of the messages - .

Cancel Claims 4, 5, 6, 7 and 8.

Add the following claim:-

3. ^{rapid telegraphically 7/21/14}
4. The method of transmitting messages, which consists in transmitting electrical pulsations corresponding to the characters of ^{a message or 7/21/14 the} messages to the receiving station at a high speed, transforming the electrical pulsations into mechanical pulsations at the receiving station, ^{recording 7/21/14} recording the last named pulsations upon a suitable phonograph record ^{phonographically 5/23/13} blank, and ^{reproducing 7/21/13} reproducing the same from the resultant record at a reduced speed, substantially as described.

REMARKS

None of the references discloses the method of transmitting messages which consists in transmitting pulsations corresponding to the characters of the messages, to the receiving station at a high speed, ^{recording} recording the pulsations at the receiving station, and reproducing the same from the resultant record at a reduced speed. This method forms the basis of the subject matter of all the claims as now presented. The Kumberg patent is the only reference in which the idea of transmitting pulsations to a receiving station, recording such pulsations, and reproducing the same from the record is revealed. Kumberg, however, fails to disclose the idea of sending the messages at a high speed and reproducing them at a reduced speed, and as a matter of fact, Kumberg's device would be inoperative if the record were reproduced at a substantially reduced speed, because, as disclosed, it is adapted for telephonic use only, and in order that the sounds shall be distinguishable upon reproduction, the phonograph record must be driven at a speed corresponding to that at which the record was made. Kumberg merely discloses a method of recording the message transmitted and reproducing the same as sent, i. e., reproducing corresponding sounds at the same speed. Applicant's method was devised in order that the capacity of the transmitting line may be increased, while at the same time the messages may be reproduced at the receiving end at such a rate as to be distinguishable by the operator. In the use for which applicant's method is especially adapted, viz., telegraphy, it is not necessary that the pulsations repro-

duced be of the same duration as those transmitted, but only that the same ratios between the successive pulsations transmitted and the corresponding reproduced pulsations be maintained. In both the Edison and Taylor references a record is made of the pulsations at the receiving station, but there is no reproduction of such record. The only way in which to decipher these records is by reading, which is slow and tedious.

For the above reasons allowance of the claims is solicited.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Lyon
His Attorney

Orange, New Jersey

May 3, 1912.

Div. 16 Room 109
Addressed
"The Commissioner of Patents,
Washington, D. C."

2-200

F. H.

Paper No. 4
All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON

June 17, 1912.

221
Thomas A. Edison,
c/o F. L. Dyer,

Orange, N. J.



Please find below a communication from the EXAMINER in charge of your application.

S. No. 616,757, filed Mar. 24, 1911, Phonographic Telegraphs.

E. B. Moore

Commissioner of Patents.

This action is in response to amendment filed May 4, 1912.

Claims 1, 2 and 4 are rejected on the patent to Kumberg, of record, and claim 3 is rejected on patent to Taylor, of record, in view of patent to Kumberg. It is of common knowledge that a phonograph may record at one speed and reproduce at another speed, and in the patent to Jones, 766,189, Aug. 2, 1904, 178 - Automatic, d, it should be noted that the method is old to record at a very high speed and reproduce at a lower speed. In this regard attention is called to lines 31 to 43, inclusive, page 1 of this patent to Jones.

Claim 4 is also rejected as an improper method because of the apparatus limitation, namely, phonograph record blank.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

PHONOGRAPHIC TELEGRAPHS

Filed March 24, 1911

Serial No. 616,757

Room No. 109.

HONORABLE COMMISSIONER OF PATENTS.

S I R :

In response to the Office action of June 17, 1912, please amend the above entitled case as follows:-

Claim 1, line 3, before "re-" insert - phonographically - . Line 5, before "reproducing" insert - phonographically - , and before "record" insert - resultant - . Lines 5 and 6, cancel "by operating the record". Line 6, before "reduced" insert - greatly - .

Cancel claim 2.

Claim 3, line 7, cancel "impressing or" and insert - phonographically - . Line 8, cancel "upon a suitable blank". Same line, before "reproducing" insert - phonographically - . Line 9, before "reduced" insert - greatly - .

Claim 4, line 5, before "recording" insert - phonographically - . Lines 6 and 7, cancel "upon a suitable phonograph record blank". Line 7, cancel "audibly" and insert - phonographically - . Line 8, before "reduced" insert - greatly - .

ReNUMBER claims 3 and 4 as 2 and 3.

R E M A R K S

In the decision rendered in Carnegie Steel Co., Ltd. vs. Cambria Iron Company, 99 O. C. 1866; 1902 C. D., 592, it is stated that in order to anticipate a process it is necessary not only to show that the device disclosed in the patent cited might have been used to carry out the process, but that such use was contemplated. Kumberg of record accordingly does not anticipate the claims as he certainly did not contemplate transmitting pulsations corresponding to the characters of the messages to the receiving station at a high speed and reproducing the same from the resultant record at a greatly reduced speed. Moreover, the apparatus disclosed in this patent could not be successfully used to carry out applicant's process as defined in the claims, as this apparatus is adapted for telephonic use only, and it is necessary, in order that the sounds reproduced from the record made by this apparatus may be distinguishable, to drive the record at a speed corresponding to that at which the record was made.

Taylor of record fails to disclose the step of reproducing the record made at the receiving station. Both Taylor and Jones fail to disclose the steps of phonographically recording the pulsations at the receiving station and phonographically reproducing the same from the resultant record at a greatly reduced speed.

For the above reasons, further consideration and allowance of the claims as now presented are requested.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Spivey

His Attorney

Orange, New Jersey

May 23rd, 1913

WH-JS

Div. XVI. Room 109. C.E.D.

2-200

Paper No. 6.....

Address only
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON

August 28, 1913.

Mr. F. L. Dyer,

Orange, New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, 616,757, filed March 24, 1911, for

Phonographic Telegraphs.

c 8-3431

was *Ewing S. B. Hall*

Commissioner of Patents.

This action is in response to amendment of May

24, 1913.

Claims 1 and 3 are rejected on the patent to Kumborg
of record, and claim 2 is rejected on the patent to Kumborg
in view of patent to Taylor of record.

It is of common knowledge as stated that a phono-
graph may be operated at any speed desired and the recording
at one speed in the patent to Kumborg and reproducing at
another speed can not be considered an invention. In telegra-
phy by the use of a perforated tape it is very common to
record at a high speed and reproduce at a lower speed as
shown in the patent to Jones cited, showing the principle
to be old.

X

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON,)
PHONOGRAPHIC TELEGRAPHS,) Room No. 109
Filed March 24, 1911,)
Serial No. 616,757.)

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to the Office action of August 28, 1913, please amend the above entitled case as follows:

Page 2, lines 28 and 29, cancel "by me".

Claims 1, 2 and 3, line 1, cancel "transmitting messages" and insert - rapid telegraphy - .

Claim 1, line 3, cancel the matter inserted by the amendment of May 4, 1912 before the word "to" and insert in place thereof - [corresponding to the characters of a message or messages - .

Claim 2, line 3, cancel "the message" and insert - a message or messages - .

Claim 3, line 3, cancel "the" second occurrence and insert - a message or - .

REMARKS

Applicant has conceived a new method of rapid telegraphy embodying a new combination of steps not disclosed in or suggested by any of the references of record. So far as applicant is aware, never, previous to his invention, have messages been phonographically recorded at the receiving station of a telegraph system. Kumberg absolutely fails to disclose applicant's invention, the apparatus disclosed in his patent comprising a telephone system combined with phonographic apparatus to record speech at either end of the line and to transmit such of ^{other} recorded

speech from one end of the line to the other -- it being essential in Kumberg's apparatus, in order to secure satisfactory results, that the phonographic record be reproduced at the same speed at which it was recorded. As has been set forth in the remarks accompanying previous amendments, the reproduction of the phonograph record or records employed in Kumberg's device at a substantially different speed from the speed of recording thereof would render Kumberg's device inoperative for the purposes for which it was intended and designed.

Referring to the rejection of claim 2 on Kumberg in view of Taylor, it is submitted that it is not at all obvious how the devices disclosed in these patents could be combined so as to produce apparatus capable of carrying out the method described in this claim, but that such a combination would involve invention.

The patent to Jones appears to be the only reference of record disclosing a method of rapid telegraphy in which the messages are transmitted and recorded at a high speed and then audibly reproduced at a lower speed. Jones, however, found it necessary to employ a very complicated and expensive apparatus to carry out this method and did not contemplate the recording of the messages phonographically and the phonographic reproduction of the resultant record. Applicant, by his improved method is enabled by a comparatively simple and inexpensive apparatus to obtain a record of very rapidly transmitted messages which do not need to be deciphered but which may be audibly reproduced in such a manner as to be rendered intelligible to a listener.

For the above reasons, further consideration
and allowance of the claims are requested.

Respectfully submitted,

THOMAS A. EDISON,

By Frank L. Hager

Orange, New Jersey

his Attorney.

July 27, 1914.

TAH-KOK

Div. 16 Room 109 WPH.

9-860

Paper No. 8
All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

Address only
The Commissioner of Patents,
Washington, D. C.,
and not any official by name.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON Sept. 21, 1914

E. L. Dyer,

Orange,

N. J.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Sr. No. 616,757, filed Mar. 24, 1911, for

Phonographic Telegraphs.

Thomas Ewing

Commissioner of Patents.

49-2021

In response to amendment of July 28, 1914.

In the patent to Jones of record or in the patent to Weing 457,126, March 2, 1897, (178-3) it is old as shown to transmit rapidly, record at this high speed and then reproduce at a slower speed. Therefore the broad method claimed by applicant is not novel. The specific method of transmitting intelligence by rapid impulses, rapidly recording them on a phonograph and reproducing them more slowly is but a change in the specific type of recorder rather than a change of the method itself. It is as applicant is well aware, extremely common to run a phonograph rapidly or slowly, just as desired. The phonograph, then, is well understood, as a receiver of a type which can be used in the method practiced by Jones or Weiny, and its substitution is believed to be obvious.

Attention is called to the patent to Gibboney, 463,188, Nov. 17, 1891, (179-6), as a further example of the type of phonograph receiver capable as described in the patent of recording at one speed and reproducing at a different speed. (In this case faster). It is believed plain Gibboney's phonograph receiver could without invention be substituted for that of Jones or Weiny. Looked at in another way the recorder of Gibboney could be without invention made to record the impulses

616,757-----2.

from the Taylor transmitter.

For the above reasons the claims are again rejected.

Examiner, Div. 16.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

PHONOGRAPHIC TELEGRAPHS

Room No. 109.

Filed March 24, 1911

Serial No. 616,757

HONORABLE COMMISSIONER OF PATENTS,

S I R :

This letter is responsive to the Office action of September 21, 1914.

It is thought that claims 1, 2 and 5 should be allowed in their present form. It is submitted that applicant has devised a new method of rapid telegraphy involving the steps of phonographically recording messages transmitted to a receiving station at a high speed and then phonographically reproducing the same at a greatly reduced speed. None of the references cited discloses the specific method consisting of the combination of steps described in the claims. It is thought that the use of the phonograph receiver of Gibbonney No. 463,188 in place of the receiver or recorder in the systems of Taylor, Jones or Weiny, in making a phonographic record of messages transmitted at a high speed and the reproduction of such messages from the resultant record at a greatly reduced speed is not an obvious thing to do, but involves a change in the method of Taylor, Jones and Weiny necessitating the exercise of invention. The advantages resulting from the new combinations of steps described in the claims are clearly set forth in the speci-

fication and in the remarks accompanying previous amendments.

The steps of phonographically recording the messages transmitted to a receiving station at a high speed and phonographically reproducing such messages from the resultant record at a greatly reduced speed, which steps are included in each of the claims now presented, introduces into the broad method disclosed by Taylor, Jones and Weiny a different idea of means. Consequently, the method claimed herein is a new method and a new invention. In this connection the Examiner's attention is directed to page 253, Vol. 1 of Robinson on patents, where it is stated in effect that any variation in the number or character of the steps of a method which introduces a different idea of means constitutes a new art and a new invention.

A useful result is attained by applicant's process, and as the art cited does not disclose the said process, reconsideration and allowance are respectfully requested.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Quar

His Attorney

Orange, N. J.

September 9, 1915

WH-JS

Div. 1 Room 109

Address only
"The Commissioner of Patents,
Washington, D. C.,"
and not my official by name.

2-200

P. H.

Paper No. 10 221

All communications respecting this
application should give the serial number,
date of filing, title of invention, and
name of the applicant.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

Oct. 12, 1915.

Mr. F. L. Uxor,

Oreana, New Jersey.

Please find below a communication from the EXAMINER in charge of the application of

T. A. Wilson, T. No. 616,757, filed Mar. 24, 1911.

Phonographic Telegraphs.

c 6-521

Thomas Ewing
Commissioner of Patents.

This action is in response to communication
filed Sept. 10, 1915.

The patents to Rogers, 277,349, May 8, 1893,
and 283,665, Aug. 21, 1893, 179 - 13, and also that
to Poulsen, 273,093, Dec. 16, 1907, (especially
lines 13-15, para 31, 193 - 1, are made of record.

These patents show it is old to transmit a tele-
graphic code message over a line, phonographically
record such messages, and thereby reproduce the mes-
sage. The only point in applicant's claim, over
this state of the art, lies in the rapid transmis-
sion and recording, and the slower reproduction, the
purpose of which is to save time in the use of the
transmission line. Since Jones, Taylor and Weine
disclose, what applicant is well aware of, that it
has long been customary to utilize a transmission line
to an increased degree by rapidly transmitting and
recording the messages and then, (as stated in lines
31 to 36, para 1, of the Jones patent), at the re-
ceiving end of the line reproducing the recorded

616,757 -- 2.

"because more slowly by passing the strip "through a loud circuit operating an ordinary force recorder at a reduced speed", it seems to the examiner the claims do not define more than an obvious use of either of the Rogers or the Poulsen system. Such a use is believed to be clearly suggested by Jones, Taylor and Tolar, and the claims are rejected.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

PHONOGRAPHIC TELEGRAPHS

Room No. 109.

Filed March 24, 1911

Serial No. 616,757

HONORABLE COMMISSIONER OF PATENTS,

S I R :

This letter is responsive to the Office action of October 12, 1915.

The rejection of the claims on the references cited in the last Office action is believed to be unwarranted. These references fail to disclose the principal steps of applicant's method which are set forth in each of the claims, namely, the steps of phonographically recording at a high speed messages transmitted to a station and then phonographically reproducing such messages from a resultant record at a greatly reduced speed. Moreover, it is submitted that in view of the patents to Jones, Taylor and Weing, none of which discloses the idea of phonographically recording messages and then phonographically reproducing such messages, and each of which involves the employment of means altogether different in character from the means employed by Rogers and Poulsen, it would not be an obvious thing to employ the systems of Rogers and Poulsen to carry out applicant's method. Phonographs are usually operated at the same speed, both in recording and in reproducing,

and no reference has been cited disclosing a method wherein a phonographic record is made at one speed and reproduced at a greatly reduced speed for purposes similar to those set forth in this application, or indeed for any other purpose. In the further consideration of the claims, the Examiner is requested to carefully reconsider the arguments set forth in applicant's letter of September 10, 1915.

Further consideration and allowance are respectfully requested.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Ryan

His Attorney

Orange, N. J.

May 28 1916

WHI-JS

Div. 16 Room 109
The Commissioner of Patents,
Washington, D. C.,
and not any official by name.

2-260

F. H.

Paper No. 12 721

All communications respecting this
application should give the serial number,
date of filing, title of invention, and
name of the applicant.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

June 12, 1916.

Mr. F. J. Dyer.

Orange, N. J.



Please find below a communication from the EXAMINER in charge of the application of

T. A. Edison, S. No. 616,757, filed Mar. 24, 1911.

Phonographic Telegraphs.

Thomas Ewing
Commissioner of Patents.

c 6-2001

This action is in response to argument filed
May 31, 1916.

The claims are again rejected upon the refer-
ences and for the reasons of record.

The examiner has fully reviewed the art and
its relation to the claims and also applicant's
arguments. It is thought there is nothing patent-
able disclosed in the application. Strictly, ap-
plicant does not phonographically record the message,
as there is nothing phonographic about the trans-
mission and recording of electric impulses produced
by a make and break device and recorded by a magnet.
The record made is not a sound record at all, altho,
when associated with different mechanisms, it may
be used to produce sound.

The case has been pending over five years and
has been many times considered. This rejection is,
therefore, made final.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

PHONOGRAPHIC TELEGRAMS

Filed March 24, 1911

Serial No. 616,757

HONORABLE COMMISSIONER OF PATENTS,

S I R :

I hereby constitute and appoint DYER & HOLDEN (Registration No. 3244), a firm composed of Frank L. Dyer and Delos Holden, whose address is Edison Office Building, Orange, New Jersey, as my associates in the prosecution of the above entitled application, and request that all correspondence be addressed to them until further notice.

Respectfully,

Frank L. Dyer

Orange, N. J.

January 10, 1917.

Patent Series

Patent Application Files

Folio # 722 Talking Machines (Case A)

Serial #: 617674

Primary Applicant: Edison, Thomas A

Date Executed: 3/28/1911

Folio No. 722

Serial No. 617, 674

Applicant.

Address.

Thomas A Edison

Title Talking Machines (Case a.)

Filed Mar. 29, 1911.

Examiner's Room No. _____

Assignee _____

Ass't Exec. _____

Recorded _____

Liber _____

Page _____

Patent No. _____

Issued _____

ACTIONS.

1 Office Letter May 3, 1911. 16

2 Amended April 8, 1912. 17

3 Rejected May 13, 1912. 18

4 Amended April 24, 1913. 19

5 Rejected June 3-1913. 20

6 _____ 21

7 _____ 22

8 _____ 23

9 _____ 24

10 _____ 25

11 _____ 26

12 _____ 27

13 _____ 28

14 _____ 29

15 _____ 30

FRANK L. DYER,
Counsel,
Orange, New Jersey.

Case A.

Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON,
a citizen of the United States, residing and having a Post Office address at
Llewellyn Park, West Orange, Essex County, New Jersey,

prays that letters patent may be granted to him for the improvements in

-TALKING MACHINES-

set forth in the annexed specification; and he hereby appoints Frank L. Dyer
(Registration No. 560), of Orange, New Jersey, his attorney, with full
power of substitution and revocation, to prosecute this application, to make
alterations and amendments therein, to receive the patent, and to transact all
business in the Patent Office connected therewith.

Thomas A. Edison

S P E C I F I C A T I O N .

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn park, West Orange, in the County of Essex and State of New Jersey, have invented certain new and useful improvements in TALKING MACHINES, of which the following is a description:

My invention relates to talking machines and more particularly to an improved method and means for recording composite sound productions such as are produced, for example, by a singer and accompanist.

It has heretofore been the practice to record only the resultant sound produced by the combination of the sounds from the various sources of the composite production. This method is objectionable in that the superposition of the undulations corresponding to the sounds from each source produces a very irregular record impression which it is difficult to accurately trace with a reproducing stylus; so that when such a record is reproduced, the distinctness of the individual parts of the composite sound production is necessarily more or less destroyed so as to render it impossible to give desired prominence and distinctness to any particular part, for example, that of the singer.

My invention has for its principal object, the provision of a method and means for overcoming this ob-

section. In conformity with this object, I record the part or parts to which I desire to give most prominence separately from the rest of the production and in such a way that the various parts may be simultaneously reproduced in perfect synchronism. In carrying out this method, the record may be made upon a single blank as in the preferred embodiment of my invention disclosed in this application or upon separate synchronously rotated blanks as in the embodiment of my invention disclosed in my companion application ^{Serial No. 617,678} entitled Talking Machines, and filed on even date herewith, or in any other suitable way. In addition to my improved method of recording sound, my invention comprises simple and efficient means for carrying the same into effect and also a new form of record resulting therefrom. Other objects of my invention will appear more fully in the following specification and appended claims:

In order that my invention may be more fully understood, attention is hereby directed to the accompanying drawings forming a part of this specification and in which, -

Figure 1 represents a plan view partly in section of a preferred type of recording means used in carrying out my invention;

Figure 2 represents a front elevation of the device shown in Figure 1, part of said device being shown in section taken on line 2-2 of Figure 1; and

Figure 3 represents a plan view of a preferred type of reproducing means. In all of the views, like parts are designated by the same reference numerals.

Referring to Figures 1 and 2, the numerals 1 and 2 represent two adjacent rooms or compartments

separated by a wall 3 having mounted therein a window 4 permitting vision from one compartment to the other. The numerals 5 and 6 represent the side walls and the numeral 7 the top wall of the compartments. Supported in any suitable way in the compartment 2 as by a bracket 8 is a sound recording machine 9 of any suitable type. The bracket 8, as shown, is provided with a flange 10 secured by rivets or other fastening means 11 to the wall 3. The machine 9 is provided with a vertical shaft 12 rotated by a motor in a cabinet 13. This shaft has secured thereto at its upper end, a table 14 for supporting a sound record or blank 15.

For recording upon the blank 15 the sounds from the various compartments, a plurality of recorders 16 are provided, each of these recorders being mounted in a traveling carriage 17 which is pivotally and slidably mounted at one end upon a horizontal rod 18 supported in brackets 19 on the base of the machine 9. The opposite end of each carriage 17 is slidably supported upon a straight edge 20 projecting vertically upwards from the base of the machine 9. Each carriage 17 has secured thereto a spring arm 21 supporting at its free end, a feed nut 22 adapted to mesh with a rotatable feed screw 23 which is supported by pivots 24 in the brackets 19. In the embodiment of the invention shown, the threads on opposite sides of the centre of the feed screw 23 are turned in opposite directions so that the carriages 17 and reproducers 16 are fed in opposite direction on the record blank 15. For driving the feed screw 23 from the shaft 12, I provide a horizontal shaft 25 having secured

at its opposite ends a bevel gear 26 and a spiral gear 27 adapted to respectively engage the bevel gear 28 on a shaft 12 and the spiral gear 29 on the feed screw 23. The shaft 25 is mounted in bearings 29' on the base of the machine 9.

Each reproducer has connected thereto a sound conveyor 30, one of which is located entirely in the compartment containing the machine 9 while the other extends through the partition wall 3 into the compartment 1. In order to produce a close connection between the last named sound conveyor and the partition wall, the latter is provided with a number of metallic flanges 31 having curved ends 32 forming a substantially spherical socket. The sound conveyor extending through the said wall has secured on its outer surface by friction or otherwise, an annulus 33 having a spherical outer surface adapted to fit closely in the socket formed by the members 31. With the construction described above, the sound conveyor extending through the wall 3 has a free universal movement and at the same time a close connection is obtained between the said conveyor and said wall, so that the various compartments remain substantially sound tight.

In using the apparatus described above, in carrying out my invention, the singer or other source to which is desired to give most prominence is placed facing the exit of one of the sound conveyors, and the orchestra or other sources of sound is placed in front of the exit of the other sound conveyor. The record blank 15 having been placed upon the table or support 14 and the motor in the casing 13 having been set in operation, a director

gives a signal through the window 1 for bringing the two sources of sound into time with each other. The rooms or compartments 1 and 2 being practically sound tight, the sounds from the various sources are independently recorded upon the blank 15. In the arrangement shown in Figure 1 the recorders 16 are so placed that the spiral record impressions made thereby are located on the record blank with their convolutions alternating with each other, but evidently many other arrangements may be used. When it is desired to reproduce the original production, the record made by the method indicated above is placed upon the turn table 34 (see Fig. 3) of a sound reproducing machine 35 of any preferred type. The reproducers 36 having been placed at the starting points of the various record impressions as indicated in Figure 3, the record when set into rotation produces in the reproducers 36 sound vibrations which are given forth through to the pivoted sound conveying arms 37 and the fixed amplifying horns 38 in perfect synchronism. As the regularity of the undulations corresponding to the sound from the principal sources, for instance, that of the singer, is not destroyed by the superposition of the undulations corresponding to the sound from the other source or sources, the first named sound can be reproduced with a high degree of distinctness. In addition to this advantage, the use of separate record grooves and reproducers greatly increases the volume of the sound given forth.

While I have described the preferred embodiment of my invention, many changes may be made in the specific structure described and shown without departing from the

spirit of my invention and I do not, therefore, wish to be limited to this disclosure.

What I claim as new and desire to secure by Letters Patent of the United States is as follows:

Cancelled 4/4/12
1. A record for composite sound productions having a plurality of record impressions each representing a part of the composite production, the said impressions being arranged to simultaneously set into vibration synchronous sound waves for producing the composite production, substantially as set forth.

2. A record for composite sound productions having a plurality of concentric spiral record impressions each representing a part of the composite production, the said impressions being arranged to simultaneously set into vibration synchronous sound waves for producing the composite production, substantially as set forth.

Cancelled 4/4/12
3. The method of recording composite sound productions which consists in producing independent mechanical vibrations corresponding to the sound from each of several sources and synchronously *recording* ~~impressing~~ these vibrations, *the independence of each* in a suitable record material, substantially as set forth.

4/4/12
4. The method of recording composite sound productions which consists in producing independent mechanical vibrations corresponding to the sound from each of several sources in a plurality of spaced recording styluses, and feeding suitable ~~insentable~~ record material synchronously past the said styluses, so as to impress these vibrations in separate paths in the record material, substantially as set forth.

3

Amended 4/26/18

5. The method of recording composite sound productions which consists in producing independent mechanical vibrations corresponding to the sound from each of several sources and synchronously impressing these vibrations in a rotating record blank, substantially as set forth.

h. f.

6. The method of recording composite sound productions which consists in producing independent mechanical vibrations corresponding to the sound from each of several sources and synchronously impressing these vibrations in concentric spiral paths having alternately arranged convolutions in a rotating record blank, substantially as set forth.

Amended 11/19/18

7. In a device of the class described, the combination of a rotatable record support, and a plurality of sound boxes provided with independent sound conveyors and adapted to be moved synchronously over the face of the record support, substantially as set forth.

8. In a device of the class described, the combination of a rotatable record support, and a plurality of recorders provided with independent sound conveyors, and means for producing a synchronous feeding movement between said recorders and said support, substantially as set forth.

9. In a device of the class described, the combination of a plurality of sound tight compartments, a rotatable record support in one of said compartments,

Universal
sound conveyors each having an enlarged open portion located in one of the compartments and a recorder connected with each sound conveyor, all of said recorders being adapted to move synchronously over the face of the record support, substantially as set forth.

10. In a device of the class described, the combination of a plurality of sound tight compartments, a rotatable record support in one of said compartments, sound conveyors, each having an enlarged open portion located in one of the compartments and a recorder connected with each sound conveyor, and means for feeding said recorders synchronously across the record support, substantially as set forth.

11. In a device of the class described, the combination of a plurality of sound compartments having a partition wall therebetween, a rotatable record support in one of said compartments, a sound conveyor extending through said partition wall, means permitting lateral movement of said conveyor for producing a closed connection between said wall and conveyor, and a recorder connected with said sound conveyor and movable transversely and vertically of the face of said record support, substantially as set forth.

12. In a device of the class described, the combination of a plurality of sound compartments having a partition wall therebetween, a rotatable record support in one of said compartments, a sound conveyor extending through said partition wall, means permitting universal

unrecorded B.
movement of said conveyor for producing a closed connection between said wall and conveyor, and a recorder connected with said sound conveyor and movable transversely and vertically of the face of said record support, substantially as set forth.

13. In a device of the class described, the combination of a plurality of sound compartments having a partition wall therebetween, a rotatable record support in one of said compartments, a sound conveyor extending through said partition wall, means permitting lateral movement of said conveyor for producing a closed connection between said wall and conveyor, a recorder connected with said sound conveyor, a separate sound conveyor located entirely in the compartment containing said record support, a recorder connected with said last named sound conveyor, and means for feeding said recorders simultaneously across the record support, substantially as set forth.

14. In a device of the class described, the combination of a plurality of sound compartments having a partition wall therebetween, a rotatable record support in one of said compartments, a sound conveyor extending through said partition wall, means permitting universal movement of said conveyor for producing a closed connection between said wall and conveyor, a recorder connected with said sound conveyor, a separate sound conveyor located entirely in the compartment containing said record support, a recorder connected with said last named sound conveyor, and means for feeding said recorders simultaneously across the record support, substantially as set forth.

This specification signed and witnessed this 28th day of March 1911

Witnesseth:

Thomas A Edison

1. Frederick Bachman

2. Anna P Klehm

Oath.

State of New Jersey } ss.,
County of Essex

THOMAS A. EDISON, the above named
petitioner, being duly sworn, deposes and says that he is a citizen of the United
States, and a resident of Llewellyn Park, West Orange, Essex County,
New Jersey,

that he verily believes himself to be the original, first and sole inventor of the
improvements in TALKING MACHINES

described and claimed in the annexed specification; that he does not know and
does not believe that the same was ever known or used before his invention or
discovery thereof; or patented or described in any printed publication in the
United States of America or any foreign country before his invention or
discovery thereof, or more than two years prior to this application; or patented
in any country foreign to the United States on an application filed more than
twelve months prior to this application; or in public use or on sale in the
United States for more than two years prior to this application; and that no
application for patent upon said invention has been filed by him or his legal
representatives or assigns in any foreign country.

Thomas A Edison

Sworn to and subscribed before me this 28th day of March 1911

Anna P Klehm

[Seal]

Notary Public.

722

617674

202
4

Fig. 1

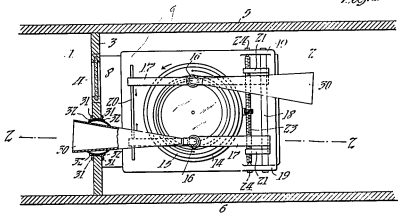
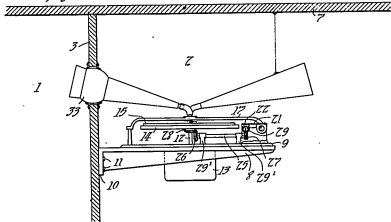


Fig. 2



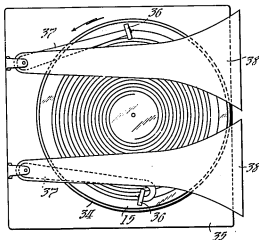
Witnesses:
 Frank D. Lewis
 Frederick Bachmann

Inventor:
 Thomas A. Edison
 by Samuel L. Brown
 his Atty.

722

617674

Fig. 3



Witnesses:

Francis D. Lewis
Frederick Bachmann

Inventor:

Thomas A. Edison
By Lewis L. Morris
His Atty.

722
Div. 23, Room 379

Address only
"The Commissioner of Patents,
Washington, D. C."

2-200

PDF

Paper No. 2

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON May 3, 1911.

Thomas A. Madison,
C/o Frank L. Dyer,
Orange, New Jersey.

Please find below a communication from the *EXAMINER* in charge of your application.

Ser. No. 617,674, filed Mar. 29, 1911, for Talking Machines.

E. B. Moore.

Commissioner of Patents.

The proper serial number should be given on page 2. 9 is
not on the drawing. Where is 20 shown in Fig. 1?

Claims 1 and 2 are drawn to a record. Claims 3, 4, 5 and
6 are drawn to a process. Claims 7 to 14 inclusive are drawn to
a talking machine. Division between these several groups is
required according to the provisions of Rule 42.

In amending this case applicant should consult the following
references:

Macdonald	Oct. 21, 1902, 711,706, (181-2)
Hill	Oct. 2, 1900, 689,020, (181-2)
Wooster,	Nov. 9, 1909, 939,781, (181-3)
Hobson, Eng. Pat.	June 15, 1907, 13,888 (181-3)

Examiner, Div. 23.

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON,)
TALKING MACHINES,) Room No. 379
Serial No. 617,674)
Filed March 29, 1911)

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to Office action of May 3, 1911,
please amend the above entitled case as follows:

In line 10, page 2, after "application"
insert - Serial No. 617,675 - .

In line 4, claim 3, change "impressing"
to - recording - and after "vibrations" insert - independent
ly of each other - .

In line 5, claim 4, cancel "indentable" .

In line 4, claim 5, change "impressing"
to - recording - ; and in line 5, same claim, after
"brations" insert - independently of each other - .

In line 5, claim 6, after "vibrations"
insert - upon a rotating record blank - ; and in lines
6 and 7, same claim, cancel "in a rotating record blank" .

Cancel claims 1, 2 and 7 to 14 inclusive and
change the numerals of claims 3, 4, 5 and 6 to 1, 2, 3 and
4 respectively.

Add the following claims:

2.

The method of recording sound vibrations
simultaneously emitted from a plurality of sources which
~~consists in conveying the sound vibrations from each of the~~
~~sources independently of those from the other sources~~
to separate recording means and in then simultaneously

and synchronously recording the different sets of sound vibrations in separate paths in the record material, substantially as described.

3. The method of recording sound vibrations simultaneously emitted from a plurality of sources which ^{plurality 1/24/23} consists in conveying the sound vibrations from each of the sources ^{and then the vibrations from one source follow the vibrations from another source conveying each described set of sound vibrations} independently of those from the other sources to separate recording means, and in then simultaneously and synchronously recording the different sets of sound vibrations in separate paths upon a single record blank, substantially as described.

4. The method of recording composite sound productions, which consists in causing the emission in separate sound-proof compartments of sound vibrations from each of a plurality of sound sources, in conveying the sound vibrations from each of the compartments independently of those from the other compartments to separate recording means, and in then simultaneously and synchronously recording the different sets of sound vibrations in separate paths in the record material, substantially as described.

5. The method of recording composite sound productions, which consists in causing the emission in separate sound-proof compartments of sound vibrations from each of a plurality of sound sources, in conveying the sound vibrations from each of the compartments independently of those from the other compartments to separate recording means, and in then simultaneously and asynchronously recording the different sets of sound vibrations in separate paths upon a single record blank, substantially as described.

16
b. The method of recording sound vibrations simultaneously emitted from a plurality of sources which ~~including the vibrations from each of the sources~~ consist in conveying the sound vibrations from each of the ~~multiple sources conveying a set of sound vibrations~~ sources independently of those from the other sources to separate recording means, and in then simultaneously and asynchronously recording the different sets of sound vibrations upon a rotatable record blank in separate spiral paths having alternately arranged convolutions, substantially as described.

REMARKS

The reference numeral 9 is shown in Fig. 2; but the Examiner is respectfully requested to apply the same to the base plate of the recording machine in Fig. 1. The spiral gear 29 is shown in the middle of the feed screw 23 in Fig. 1; and the Examiner is respectfully requested to apply the reference numeral thereto in the said figure.

The claims as now presented are all drawn to applicant's process; and action on the merits thereof is accordingly respectfully requested. The right is reserved to file divisional applications on the subjects matter of the canceled claims.

Respectfully submitted,

THOMAS A. ELLISON

Orange, New Jersey.
April 8, 1912.

By Frank R. Dyer,
his Attorney.

Div. 23. Room 379

2-200

Paper No. 4, Rej.

72 ✓
The Commissioner of Patents,
Washington, D. C.

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

May 13, 1912.

Thomas A. Edison,
Care Frank L. Dyer,
Orange, New Jersey.

U. S. PATENT OFFICE,
MAY 13 1912
MAILED.

Please find below a communication from the EXAMINER in charge of your application.

for Talking Machines, filed March 29, 1911, serial number
617,674.

E. B. Moore

Commissioner of Patents.

This action is responsive to the amendment filed April 9, 1912.

Claims 1, 2, 3, 5 and 6 are rejected upon Will of record; Macdonald of record; Hobson of record; Jungren, June 20, 1911, #995,680, (181-3).

Claims 4 and 9 are rejected upon the cited art. So far as applicant's process is concerned it is patentably immaterial in what conformation the record grooves are produced. Such an arrangement of record grooves, however, are old in Klein, March 6, 1906, #614,058, (181-17).

Claim 6, line 2, correct the spelling of "plurality".

Claims 7 and 8 are rejected upon the cited art. The degree to which the several performers are isolated, is not patentably material so far as applicant's process is concerned.

Claims 7 and 8 are also objectionable as defining the process by the apparatus employed.

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON,)
TALKING MACHINES.)
Filed March 29, 1911.) Room No. 379.
Serial No. 617,674.)

HONORABLE COMMISSIONER OF PATENTS.

S I R:

In response to the Office action of May 13, 1912, please amend the above entitled case as follows:

Cancel claims 1, 2 and 3.

In lines 3 and 4, claim 5, change "conveying the sound vibrations from each of the sources independently of those from the other sources" to - isolating the vibrations from one source from the vibrations from another source, conveying each isolated set of vibrations - ; and in line 5, same claim, after "means" insert a comma (,).

In line 2, claim 6, change "plurality" to - plurality - ; in lines 3 and 4, same claim, change "conveying the sound vibrations from each of the sources independently of those from the other sources" to - isolating the vibrations from one source from the vibrations from another source, conveying each isolated set of vibrations- ; and in line 5, same claim, after "means" insert a comma (,).

In lines 3 and 4, claim 9, change "conveying the sound vibrations from each of the sources independently of those from the other sources" to - isolating the vibrations from one source from the vibrations from another source, conveying each isolated set of vibrations - ; and in line 5, same claim, after "means" insert a comma (,).

Change the numerals of claims 4 to 9 inclusive to 1 to 6 inclusive.

REMARKS

Referring to the rejection of claims 1 and 6 (former claims 4 and 9) it is pointed out that the production of different arrangements of the record undulations or vibrations involves different procedures in carrying out the recording process, and the formation of the record grooves in a certain shape and arrangement is accordingly thought to be properly a part of the process. The mere fact that a process may be quasi-mechanical in its nature does not render it unpatentable. The patent to Klein does not show an arrangement of record grooves as specified in the claims in question, one of Klein's grooves D being a guide groove and not a record groove (see lines 39 to 42 of Klein's specification).

Claims 2, 3 and 6 differentiate from the references of record by specifying the step of isolating the vibrations from one source from the vibrations from another source. In all of the references, some of the vibrations intended for each recording instrument are permitted to commingle with and become recorded with the vibrations intended for other recording instruments. As the isolation of the vibrations as specified in these claims is the most important object of applicant's invention, the importance thereof in applicant's process is obvious.

Claims 4 and 5 differentiate from the references by specifying the step of causing the emission in separate sound proof compartments of sound vibrations from each of a plurality of sources. The remarks made above in connection with claims 2, 3 and 6 apply equally well to

claims 4 and 5. Referring to the Examiner's objection to the last named claims, it is thought that there is no objectionable reference to apparatus in these claims. The expression "causing the omission in separate sound proof compartments, etc." states, it is submitted, a true process step, the sound proof compartment being specified to facilitate an accurate description of this step.

The claims are thought to be patentable, and reconsideration and allowance are respectfully requested.

Respectfully submitted,

THOMAS A. EDISON,

By Francis L. Dyer
his Attorney.

Orange, New Jersey,

April 24, 1913.

FB-KGK

Div23..... Room379.....

2-260

Paper No. Rej.....

Address only
The Commissioner of Patents,
Washington, D. C.
J.H.D. - But.

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

June 3, 1913.

Frank L. Dyer,

Orange, New Jersey.

U. S. PATENT OFFICE,
JUN 3 1913
MAILED.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, serial number 617,674, filed March 29, 1911,
for Talking Machines.

E. B. Moore

Commissioner of Patents.

6-2621

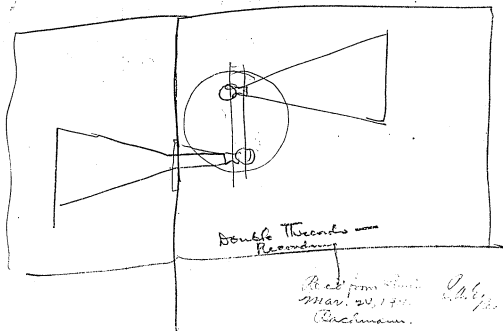
This action is responsive to the amendment filed April 25,

1913.
Claim 1 is rejected on Tore, French patent, Feb. 16, 1910,
412,888, (181-3). No invention is found in arranging his grooves
as in Berliner, October 12, 1909, 936,976, (181-17). See also
Couade, French patent, rec. 11, 1907, 384,921, (181-3).

Claim 1 is also rejected on the references of record for
the reasons of record. The arrangement of the spiral is
patentably immaterial, especially as respects the process, the
process of the references being the same as applicant's.

Claims 2, 3, 4 and 5 are rejected on Tore; also on the
references of record for the reasons of record. See especially
the disclosure in Jungren, The degree of isolation of the
different recording instruments is patentably immaterial, especial-
ly as regards the process, that of the references so far as the
process is concerned, being the same as applicant's.

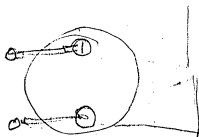
Claim 6 is rejected on Tore; also on the references and
reasons of record, in connection with the reasons set out in the
rejection of claim 1.



Rec'd from Lewis
Mar. 24, 1911.
Bachmann.

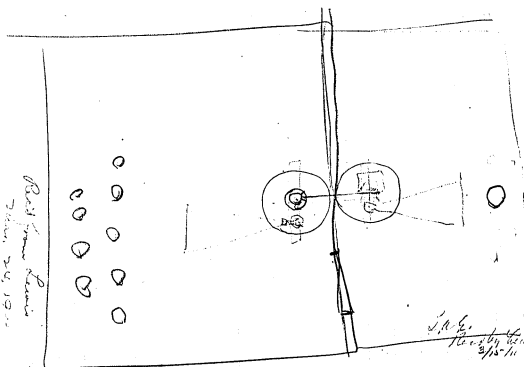
L. B. G.
Res. Phy. Lewis
3/24/11

Double Threaded Reproducing



Rec'd from Lewis
Mar. 24, 1911.
Bachmann.

L. B. G.
Res. Phy. Lewis
3/24/11



S.A.G.
Rev. by G.H.
2/15/11

o o o o o
o o o o o

Revised from G.H.
2/15/11
S.A.G.

Patent Series

Patent Application Files

Folio # 723 Talking Machines (Case B)

Serial #: 617675

Primary Applicant: Edison, Thomas A

Date Executed: 3/28/1911

Folio No. 723

Serial No. 617,675

Applicant.

Address.

Thomas A Edison

Title Talking machines (Case B)

Filed March 29, 1911

Examiner's Room No. _____

Assignee _____

Ass'g't Exec. _____

Recorded _____

Liber _____

Page _____

Patent No. _____

Issued _____

ACTIONS.

- | | | |
|----|-----------------------------------|----|
| 1 | <u>office letter May 3, 1911.</u> | 16 |
| 2 | <u>Amended April 1, 1912</u> | 17 |
| 3 | <u>Rejected May 13, 1912.</u> | 18 |
| 4 | <u>Amended April 24, 1913.</u> | 19 |
| 5 | <u>Rejected June 3-1913.</u> | 20 |
| 6 | | 21 |
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| 12 | | 27 |
| 13 | | 28 |
| 14 | | 29 |
| 15 | | 30 |

VAULT

Edison
1913

FRANK L. DYER,

Counsel,

Orange, New Jersey.

Case 2

Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON,
a citizen of the United States, residing and having a Post Office address at
Llewellyn Park, West Orange, Essex County, New Jersey,

prays that letters patent may be granted to him for the improvements in

-TALKING MACHINES-

set forth in the annexed specification; and he hereby appoints Frank I. Dyer
(Registration No. 560), of Orange, New Jersey, his attorney, with full
power of substitution and revocation, to prosecute this application, to make
alterations and amendments therein, to receive the patent, and to transact all
business in the Patent Office connected therewith.

Thomas A. Edison

S P E C I F I C A T I O N .

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, in the County of Essex and State of New Jersey, have invented certain new and useful improvements in TALKING MACHINES, of which the following is a description:

My invention relates to talking machines and more particularly to an improved method and means for recording composite sound productions such as are produced, for example, by a singer and accompanist.

It has heretofore been the practise to record only the resultant sound produced by the combination of the sounds from the various sources of the composite production. This method is objectionable in that the superposition of the undulations corresponding to the sounds from each source produces a very irregular record impression which it is difficult to accurately trace with a reproducing stylus; so that when a record thus formed is reproduced, the distinctness of the individual parts of the composite sound production is necessarily more or less destroyed so as to render it impossible to give desired prominence and distinctness to any particular part, for example, that of a singer or other soloist.

4/11.

Serial No 57,674.

In my companion application for Letters Patent, entitled "Talking Machines" filed on even date herewith, I have described a method and means for overcoming this objection. My present invention is a modification of that described in said companion application. In the method disclosed in this application, I record the parts of the composite sound on separate record blanks preferably by mounting these blanks on separate machines placed in separate compartments, the said machines being driven in synchronism by any suitable means. I can then reproduce the composite production by reproducing the resultant records on separate machines driven in synchronism. In addition to my improved method, my invention comprises simple and efficient means for carrying the same into effect. Other objects of my invention will appear more fully in the following specification and appended claims.

In order that my invention may be more fully understood, attention is hereby directed to the accompanying drawings forming part of this specification and in which -

Figure 1 represents a plan view partly in section of the preferred embodiment of my recording means;

Figure 2 represents a front elevation of the device shown in Figure 1, part of said device being shown in section taken on line 2-2 of Figure 1; and

Figure 3 represents a plan view of my preferred reproducing means.

In all of the views, like parts are designated by the same reference numerals.

Referring to Figures 1 and 2, the numerals 1 and 2 represent two adjacent rooms or compartments separated by a wall 3 having mounted therein a window 4 permitting vision from one compartment to the other. The numerals 5 and 6 represent the side walls and the numeral 7 the top wall of the compartments. In each compartment is placed a talking machine 8. These machines, in the form of my invention disclosed, are provided with downwardly turned flanges 9 secured by a rivet or other securing means 10 to the partition wall 3 of the compartment. Each machine is provided with a table or support 11 for a record or blank 12 and is secured to and rotatable with a shaft 13. The shaft 13 of one of the machines, for example, that in the compartment 2 as shown, is connected with and rotated by a motor mounted in a casing 14 depending from the base of the corresponding machine. Mounted in a bearing 3' in the wall 3 is a horizontal shaft 15 having secured at its opposite ends bevel gears 16 and 17. The gear 16 meshes with the bevel gear 18 secured to the shaft 13 of the machine in compartment 1, and the gear 17 with the bevel gear 19 secured to the shaft 13 in the compartment 2. By means of the above described connecting gearing, the record supports or tables 11 are rotated in synchronism by the motor in the casing 14.

Each machine is provided with a recorder 20 mounted in a traveling carriage 21 which is pivotally and slidably mounted at its rear end on the horizontal rod 22 mounted in brackets 22', the said carriage, ^{being} slidably supported at its forward end by the straight edge 23.

for feeding the carriage 21 across the record 12 transversely of the record groove, a nut 24 is secured at one end of the spring arm 25 which latter is secured at its opposite end to the carriage 21, the feed nut 24 being adapted to engage a feed screw 26 mounted in the brackets 22 on the base of the machine. As is common in devices of this kind, the feed nut engages only the upper portion of the screw 26; so that as the carriage 21 is lifted at its forward end to remove the reproducer from the record, the feed nut disengages from the feed screw. For rotating the various feed screws in synchronism, each screw has secured thereto, a spiral gear 27 engaged by a corresponding gear 28 secured to the shaft 15. The feed screw and gears 27 and 28 for one compartment are preferably identical with the corresponding parts for the other compartment, as shown; so that a uniform feed is obtained in all the machines employed in my invention. This construction, however, is not necessary as my invention could be carried out by the use of feeds having any desired ratio to each other so long as two machines operated in synchronism. Each reproducer has secured thereto a sound conveyor 29.

In using the apparatus described above in carrying out my invention, the singer or other source of the sound to which it is desired to give most prominence is placed facing the exit of the sound conveyor in one of the compartments, as at a in Figure 1. The orchestra or other source or sources of sound is placed in front of the exit of the other sound conveyor, as at b in compartment 2. The record blank having been placed upon the

tables or supports 11 and the motor in the casing 14 having been set into operation, a director gives the signal through the window 4 for bringing the two sources of sound into time with each other. The rooms or compartments 1 and 2 being sound tight, the sound from the sources a and b are independently recorded upon the record blanks in the corresponding compartments.

When it is desired to reproduce the original production, the resultant records are placed upon the tables 30 (see Fig. 3) of a plurality of machines 31 driven in synchronism by any preferred type of connecting gearing 32. The reproducers 33 having been placed at the starting point of the various records each of the latter when rotated by its support causes the corresponding reproducer to give forth through the sound conveying arm 34 and the sound amplifier 35 into the atmosphere, the sounds which were recorded in the compartments 1 and 2. As the records are synchronously rotated during both the recording and the reproducing, the various sounds are blended into the perfect harmony which existed during the process of recording. Furthermore, as the regularity of the undulations impressed in the record recorded in the compartment 1 is not destroyed by the superposition of the undulations from the sound in the compartment 2, the sound produced in compartment 1 can be reproduced with a high degree of distinctness. In addition to this advantage, the use of separate record grooves and reproducers greatly increase the volume of the sound given forth.

While I have included the claims for my invention in its broadest aspect in my companion application referred to above and while I have included in this application only such claims as are patentably different from the disclosure made in the said companion application, many modifications may be made in the specific structure and in the method herein disclosed without departing from the spirit of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is as follows:

- Cancelled 4/16/10*
1. In a device of the class described, the combination of a plurality of rotatable record supports, a sound box for each support, and means for rotating said supports in synchronism, each of said sound boxes having an independent sound conveyor connected therewith, substantially as set forth.
 2. In a device of the class described, the combination of a plurality of rotatable record supports, a sound box for each support, means for rotating said supports in synchronism, and means for producing a relative feeding movement between said sound boxes and said supports, each of said sound boxes having an independent sound conveyor, substantially as set forth.
 3. In a device of the class described, the combination of a plurality of rotatable record supports, a recorder for each support, means for rotating said supports in synchronism, and independent sound conveyors for the respective recorders, substantially as set forth.

4. In a device of the class described, the combination of a plurality of compartments, a rotatable record support and a recorder therefor in each compartment, and means for rotating said record supports in synchronism, substantially as set forth.

5. In a device of the class described, the combination of a plurality of compartments, a rotatable record support and a recorder therefor in each compartment, means for rotating one of said record supports, and means connecting said supports for synchronous rotation, substantially as set forth.

6. In a device of the class described, the combination of a plurality of compartments, a rotatable record support and a recorder therefor in each compartment, means for rotating one of said record supports, and gearing connecting said supports for synchronous rotation, substantially as set forth.

7. In a device of the class described, the combination of a plurality of compartments, a rotatable record support and a recorder therefor in each compartment, means for rotating one of said record supports, means connecting said supports for synchronous rotation, and means connected with said second named means for producing a synchronous feeding movement transversely of the record grooves between each of said recorders and its record support, substantially as set forth.

8. In a device of the class described, the combination of a plurality of compartments, a rotatable

record support and a recorder therefor in each compartment, means for rotating one of said record supports, gearing connecting said supports for synchronous rotation, and means connected with said gearing for producing a synchronous feeding movement transversely of the record grooves between each of said recorders and its record support, substantially as set forth.

9. The process of recording composite sound productions composed of sounds emanating from a plurality of different sources which consists in simultaneously recording on separate synchronously driven record blanks the sound from each source, substantially as set forth.

10. The method of recording composite sound productions which consists in producing independent mechanical vibrations corresponding to the sound from each of several sources, and simultaneously ^{recording} ~~impressing~~ these vibrations in separate synchronously rotated record blanks, substantially as set forth.

United States Patent 2,441,441

This specification signed and witnessed this 28th day of March 1911

Witnesseth:

Thomas A. Edison

1. Fredrick A. Bachman

2. Anna P. Rechen

Oath.

State of New Jersey } ss.,
County of Essex

THOMAS A. EDISON, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of Ilewellyn Park, West Orange, Essex County, New Jersey,

that he verily believes himself to be the original, first and sole inventor of the improvements in TALKING MACHINES

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

Thomas A. Edison
Sworn to and subscribed before me this 28th day of March 1911

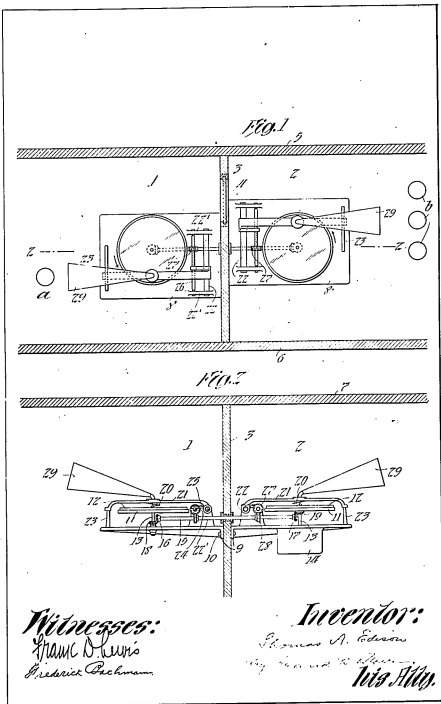
[Seal]

Anna P. Rechen
Notary Public.

723

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2-1

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5



617675

2-2

(10)

723

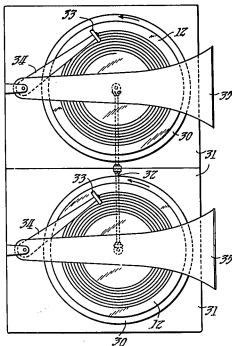


Fig. 3

Witnesses:

Franz D. Lewis
Friedrich Bachmann.

Inventor:

Thomas A. Lewis
By Grant & Rogers
his Atty.

Div. 23 Room 379

Address only
"The Commissioner of Patents,
Washington, D. C."

123

2-200

PPD

Paper No. 2

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON

May 3, 1911.

Thomas A. Edison,

C/o Frank J. Dyer,

Orange, New Jersey.

Please find below a communication from the EXAMINER in charge of your application.

Ser. No. 617,675, filed Mar. 29, 1911, for Talking Machines.

E. B. Moore

Commissioner of Patents.

The proper serial number should be given at the top of
page 2. 3' is not on the drawing.

Claims 1 to 8 inclusive are drawn to a talking machine,
while claims 9 and 10 are drawn to a process. Division is required
according to the provisions of Rule 42.

In addition to the art cited in applicant's companion
application applicant should see Davis, May 24, 1910, 958,730
(181-14); Prescott, July 26, 1910, 965,330 (181-16).

Examiner, Div. 23.

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON,)
TALKING MACHINES,)
Serial No. 617,675,) Room No. 379
Filed March 29, 1911)

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to Office action of May 3, 1911,
please amend the above entitled case as follows:

In line 1, page 2, after "Patent" insert
- Serial No. 617,674 - .

In line 4, claim 10, change "impressing"
to - recording - .

Cancel claims 1 to 8 inclusive and change
the numerals of 9 and 10 to 1 and 2 respectively.

Add the following claims:

1. The method of recording sound vibrations
simultaneously emitted from a plurality of sources which
~~consists in conveying the vibrations from each of the~~
~~sources independently of those from the other sources to a~~
separate recording instrument, and in simultaneously and
synchronously recording the sound vibrations ~~from the~~
various ^{sets} ~~sources~~ on separate synchronously driven record
blanks, substantially as set forth.

2. The method of recording composite sound pro-
ductions which consists in causing the emission in separate
sound-proof compartments of sound vibrations from each of
a plurality of sound sources, in conveying the sound
vibrations from each of the compartments independently of

those from the other compartments to separate recording means, and in then simultaneously and synchronously recording the different sets of sound vibrations on separate synchronously driven record blanks, substantially as set forth.

R E M A R K S

The Examiner is respectfully requested to apply the reference numeral 2 to the drawings to indicate the bearing in the wall 3 for the shaft 15.

All of the claims now in the case are drawn to applicant's process; and action on the merits thereof is accordingly respectfully requested. The right is reserved to file a divisional application on the subject matter of the canceled claims.

Respectfully submitted,

Orange, New Jersey.

THOMAS A. EDISON.

April 1, 1912.

By

Frank L. Wyck
his Attorney.

Div.23Room..... 379

Address only
"The Commissioner of Patents,
Washington, D. C."

a-200

Paper No. 4, Rej.

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

J. H. D.-S.

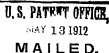
DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON

May 13, 1912.

773
Thomas A. Edison,
Care Frank L. Dyer,
Orange, New Jersey.



Please find below a communication from the EXAMINER in charge of your application.

for Talking Machines, filed March 29, 1911, serial number 617,675.

E. B. Moore

Commissioner of Patents.

This action is responsive to the amendment filed April 9,
1912.

Claims 1, 2 and 3 are rejected upon Hill, October 2, 1900,
#659,028, (181-2), and also as not patentably distinguishing
from,

Macdonald, October 21, 1902, #711,706, (181-2);

Jungren, June 20, 1911, #995,686, (181-3), or

Hobson, Eng. patent, June 15, 1907, #13,858, (181-3).

Claim 4 is rejected upon the cited art. The degree of
isolation of the performers is held not to be patentably
material so far as applicant's process is concerned. Moreover,
claim 4 is objectionable as defining the process by the apparatus
employed.

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON,)
TALKING MACHINES,)
Filed March 29, 1911,) Room No. 379.
Serial No. 617,675.)

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to the Office action of May 13, 1912, please amend the above entitled case as follows:

Cancel claims 1 and 2.

Claim 3, lines 3 and 4, change "conveying the vibrations from each of the sources independently of those from the other sources" to - isolating the vibrations from one source from the vibrations from another source, conveying each isolated set of vibrations - ; in line 6, same claim, change "from" to - in - ; and in line 7, same claim, change "sources" to - sets - .

Change the numerals of claims 3 and 4 to 1 and 2 respectively.

REMARKS

Claim 1 differentiates from the references of record by specifying the step of isolating the vibrations from one source from the vibrations from another source. In the disclosure of all the references, some of the vibrations intended for each recording instrument are permitted to commingle with and to become recorded with vibrations intended for other recording instruments. As the isolation of the vibrations as specified in this claim is the most important object of applicant's invention, the importance

thereof in applicant's process is obvious.

Claim 2 differentiates from the references by specifying the step of causing the omission in separate sound proof compartments of sound vibrations from each of a plurality of sound sources. The remarks made above in connection with claim 1 apply equally to claim 2. Referring to the Examiner's objection to claim 2, it is thought that there is no objectionable reference to apparatus in this claim. The expression "causing the omission in separate sound proof compartments of sound vibrations etc." states, it is submitted, a true process step, the sound proof compartment being specified to facilitate an accurate description of this step.

The claims are thought to be patentable and reconsideration and allowance are respectfully requested.

Respectfully submitted,

THOMAS A. EDISON,

By Frank L. Dyer
his Attorney.

Orange, New Jersey,

April 24, 1913.

FB-KGX

Div. 23 Room 379

2-260

Paper No. 8, Reg.

Address only
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

J. H. Dyer, - Sut.

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON

June 3, 1913.

Frank L. Dyer,

Orange, New Jersey.

U. S. PATENT OFFICE,
JUN 3 1913
MAILED.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, serial number 617,675, filed March 29, 1911,
for Talking Machines.

4-5231

E. B. Moore.

Commissioner of Patents.

This action is responsive to the amendment filed April
25, 1913.

Claims 1 and 2 are rejected on the references of record, in
view of Fore, French patent, Feb. 16, 1910, 412,698, (161-3).

Claims 1 and 2 are also rejected on the references of record
for the reasons of record. The degree of isolation of the sets
of sound vibrations is held patentably immaterial especially
so far as the process is concerned. The process of the
references of record is the same as that employed by applicant,
see also Couade, French patent, Dec. 11, 1907, 384,921, (181-3).
Attention is also directed to Wooster, Nov. 9, 1909, 939,781,
(181-3), and Werliner, Feb. 4, 1902, 692,502, (181-3).

Patent Series


Patent Application Files

Folio # 728 Sound-Box

U.S. Patent #: 1078266

Primary Applicant: Edison, Thomas A

Date Executed: 4/3/1911

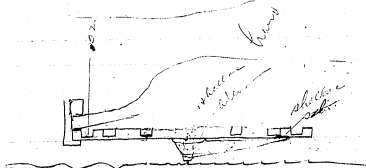
Rush  L.H.C. 30/1/11
 3/20/11 J.M. Mar Recd by L.H.C.
 3/20/11 3/20/11

The object is to put weight
 directly on the diaphragm
 instead of indirectly
 so as to make an even water line
 over the whole diaphragm
~~and~~

Carved board diaphragm
 weighted down by lead
 pellets or shot set freely into
 receptacles in the diaphragm.

The receptacles may be covered
 over to prevent the pellets from
 falling out especially during shipment.

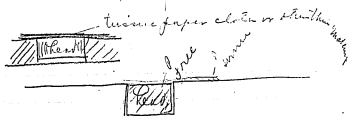
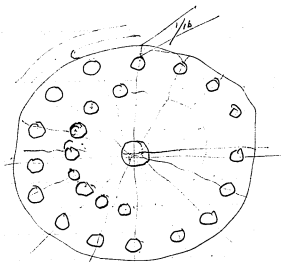
L.H.C.
 Mar 30/11
 R.H.C. L.H.C.



130 -

.02





Plg.

Mar 20/911

Recd by Lewis

Patent Series
Patent Application Files

Folio # 731 Production of Nickel Hydroxid

U.S. Patent #: 1167484

Primary Applicant: Edison, Thomas A

Date Executed: 4/7/1911

Patented June 11/1911. U.S. No. 1,007,191
New method of
refining nickel hydrous

The object of this invention is
to cheapen the production
of Nickel hydroxide for use
in alkaline storage batteries

The invention consists in
eliminating the tedious &
expensive washing out of the
products of reaction while in
a semi colloidal form & at the
same time produces a porous
hydrate more suitable for
use in the battery

This is done by first making
a standardised solution of
Sodium hydroxide into which
a standardised quantity of
Nickel Sulphate is poured

2

slowly while being
agitated until the proper
amount of Nickel sulphate
is added, the proportions
being such that there
shall be a considerable
Excess of alkali. The porosity
of the final nickel hydrate
being proportional to
the excess of alkali -
Of to a solution of 520
litres of ~~NaOH~~ of alkali
containing — grams per
litre of dry NaOH.
There is added 500 litres
of Nickel sulphate
containing — grams of
anhydrous sulphate
there will be after
precipitation. % Excess

3

of NaOH -

The ~~dry~~ pulp is then evaporated down until of the consistency of cream & then put into pans and dried over a period of about 4 days the dried material containing the Sodium Sulphate & free NaOH is put into a percolator & water poured until only a trace of sulphate is left it is then dried & when sized is ready for use in the tubes of the battery. The great saving made is due to the rapidity ~~of~~ & ease of washing out the Sodium Sulphate & the ~~cost of removing unnecessary~~

4

The use of large quantities of distilled water & the great loss of time in the settling of the pulp after each wash, also in producing a nickel hydroxide ~~whose~~ whose physical condition is more suitable for high output or capacity than Nickel hydroxide made in the usual manner.

It is desirable after settling a portion of the reaction liquid may be drawn off before ~~the reaction is complete~~ ^{the reaction is complete} & the claim, the ~~liquid~~ ^{residue} is made substantially as set forth -

Ni hydroxide dried with kieselguhr or a part of the product of the formation reaction dried together the latter removed subsequently after drying

5
Methyl hydrox in which the
products of the formation
reaction is dried with it
a considerable percent of
surplus free alkali
left in the pulp to insure
+ control the porosity

Etc - Etc

By products

Lanahan
Under these conditions
OK go ahead & test you
Can June 11, 1945

Mr. Edison:-

POLIO 731. PRODUCTION OF NICKEL HYDROXIDE

This is the application which you instructed me this morning to abandon. I am writing this memorandum to make sure that I have explained the situation to you completely.

This application is one of three which were filed on the same day. The other two have gone to patent as follows:-

No. 1,083,355, for process of forming nickel hydroxide or other insoluble chemical compound by a certain dry method.

No. 1,083,356, for process and product for an active material made up of nickel hydroxide with a small percentage of cobalt hydroxide formed by drying the precipitated pulp and there-after removing the insoluble reaction products.

In each of these patents there is a reference to the application now under consideration, and I consider that the process of the present application is substantially disclosed in patent No. 1,083,355. Copies of these patents are submitted herewith. If I am correct in this opinion, you will not be able to keep the process of the application under consideration secret by abandoning it.

Very good process claims have been allowed in this application, and the only question remaining to be settled is that of the product claims. In view of these circumstances, I should think it would pay you to take out this patent even with only process claims in it, as this would afford you a certain measure of protection at least. In our last amendment, we asked for the

(2)

allowance of six product claims. Possibly, if we reduce the number to, say, three, and change the form of some of them, we may get something allowed on the product, and I should recommend making an effort to get at least such product claims allowed as can be obtained without going to the expense of an appeal.

If you should change your decision in this matter, we will have to act promptly as the amendment must be received in the Patent Office not later than June 16th. An amendment for this purpose has already been prepared and is ready to be mailed.

While I agree with you that it is difficult to prove infringement of patents of this character and that in many cases better protection is obtained by keeping the process secret, I do not think this consideration is applicable to the application under consideration because of patent No. 1,083,356 referred to above, which has already been published.

Henry Laushman

HL-JS

Patent Series

Patent Application Files

Folio # 732 Storage Battery

U.S. Patent #: 1083356

Primary Applicant: Edison, Thomas A

Date Executed: 4/7/1911

Chas. F. Smith
Jan 17/1911

Chas. F. Smith
Jan 17/1911

The object of this invention is to increase the capacity of nickel hydroxide to store oxygen when used in an alkaline storage battery.

The invention consists in ~~adding~~ from $1\frac{1}{2}$ to 3% of Cobalt hydroxide intimately mixed with the nickel hydroxide.

This raises the capacity of the nickel hydroxide mixture to a higher ^{capacity} than ~~is~~ without the Cobalt hydroxide. The reason has not as yet been

2

ascertained but it is probably that it acts catalytically to alter the physical structure

The proper amount of Cobalt sulphate is added to the nickel sulphate solution to obtain the right percentage. Then ~~the~~ solution being standardized to a known strength. This solution is then slowly added to a standard solution of sodium hydroxide - while agitated, so that

3

When the reaction is completed there is about % of free NaOH. The pulp is then dried slowly with a part or all of the products of the reaction which is principally Sodium Sulphate. After drying the whole of the granular powder is washed in a percolator by water until only a trace of sulphates or soda remains - ~~then~~ the powder is then dried & screened to size & ready for use in the tubes of the factory.

From 20 to 30 lbs

4

Claim - Nickel hydroxide containing or under percent of Cobalt hydroxide

Nickel hydroxide containing a small percent of Cobalt hydroxide made by precipitating the salts of these metals together by an alkali leaving a portion or all of the products of the reaction in the pulp drying the pulp & washing out the products & then drying

ditto above & use of % free alkali to control the porous

5

claims on a Gallery
with this kind of
Ni hydroxide - (10) Cobalt,
& porosity Etc Etc

Patent Series
Patent Application Files

Folio # 733 Art of Forming Chemical Compounds

U.S. Patent #: 1083355

Primary Applicant: Edison, Thomas A

Date Executed: 4/7/1911

G. H. Peckham, Lewis
Mar 17 1911
Filed Mar 17 1911
Mar 17 1911

The object of this invention is to cheapen the production of nickel hydroxide for use in alkaline storage batteries.

The invention consists in dispensing with the water of precipitation which must be subsequently dried out, & bringing together dry powdered nickel sulphate and dry sodium hydroxide in the proper proportions & mixing the same in cyclone mills, the reaction taking place between the dry

2

powders very rapidly. The water of crystallization of the nickel sulphate serving to hasten the reaction & make a tough dough like mass.

This mass is dried very slowly - then the whole is broken up & put in a percolator & the products of reaction washed out & the resultant hydroxide dried, when it is ready for use - for batteries it is best to have a considerable excess of alkali to render the hydroxide more porous. This method is not alone useful for forming nickel hydroxide but is

3

a general method for
all kinds of chemical
~~precipitations~~ where
one of the salts of the
metals has considerable
water of crystallization-

~~2~~ Very large output are
thus attainable in
chemical works within
small spaces & with
simple heating

Claim. ~~2~~ ~~Specifically~~ for
 $\text{Ni}(\text{OH})_2$ & also a general
claim for chemical precipitation
as I can sell the right to
chemical works generally

Patent Series

Patent Application Files

Folio # 743 Art of Separating Copper from Other Metals

U.S. Patent #: 1050629

Primary Applicant: Edison, Thomas A

Date Executed: 5/1/1911

F743

Received March 24 1911

Patent

The object of this invention is to remove ^{metallized} copper from the Composite sheets of alternately Electroplated sheets of Copper and Nickel to form ^{large sheets or} flakes of Nickel for use in an alkaline storage battery more particularly described in my patent No 865 687 and also patent No 865 687 which describes the process formerly used to dissolve out the Copper between the Nickel —

This invention consists in the discovery that

2

~~Metallized~~ Copper is rapidly dissolved by a strong solution of Sulphate of ammonia, containing a small quantity of ^{any} Cupric Chloride, and ^{Chloride reduced by Copper sulphate} that the rapidly of solution is increased very considerably ^{stimulating} by heating the solution while the reaction goes on =

The products from the solution of the metallic Copper is a basic sulphate of Copper, which is insoluble in the liquid + is held in suspension by the stirring.

3

The Cupric Chloride merely acting as a transfer agent for oxidizing Carrying Oxygen to & oxidizing the Copper by first forming monochloride of Copper which is soluble in the ammonium sulphate, the air which is blown into the liquid by a pipe connected to an air compressor serves to change the reaction regenerating Cupric Chloride.

This process renders unnecessary the use of large quantities of

4

Ammonia, which must be regenerated from the solution ^{after} ~~which~~ ~~the~~ saltnitrolyz and also the Copper itself must be regenerated ~~top~~

The whole making
an Expensive, Complicated
& disagreeable process
as the Ammonia solution
cannot be heated &
air must reach the
solution to move
solution of the Copper

which ⁵avoids the ⁵boiling to be
filled with fumes of ammonia
by this invention there
is no fumes of ammonia
precipitate + no free
ammonia is used. The
solution is slightly acid
+ the Copper automatically
is thrown out as an
insoluble basic
sulphate, hence the
solution can be used
continuously by filtering
off the basic salt -
+ adding a small quantity
of sulphate of ammonia

6

Corresponding to the
amount of sulphate
removed in the basic
salt. The Cupric Chloride
regenerates itself +
remains in the liquid.
It is only necessary
to add a little from
time to time to make
up for liquid lost in
the operations of filtering.

This process is a very
useful one in the arts
and I do not desire to
confine its use to the
dissolution of Copper in
the special case recited

7

Should get some good
Claims on this =

There are a number
of variations of this
type of solvent &
I will make the
Experiments & apply
for other patents
so as not to complicate
this application -

~~See also~~

8

Want claim
^{a readily soluble}
Cupric Chloride
in combination with
a solvent of Copper
monochloride such as
Sulphate of ammonia
for dissolving Metallic
Copper -
Same in H₂O at saturation
" " stirred
Continuously
same supplied with
air by forcing it thru
solution which acting

Claims ~~W. H. H.~~
J. H. H.

J. H. H.

To each Liter of solution
225gr Ammoniumchloride
16gr. Copperchloride

Legue Dept

Patent Series

Patent Application Files

Folio # 745 Art of Separating Copper from Other Metals

U.S. Patent #: 1050630

Primary Applicant: Edison, Thomas A

Date Executed: 5/12/1911

1.

.25% Solution Sulphate
Copper, ~~at~~ about 15 grams
More or less of Cupric
Chloride -

Solutions kept near
boiling point
are passed -

Basic Sulphate
formed, ~~which is~~ *unchanged*

The basic sulphate
filtered off & pure &
is not back to Cu sulphate
by adding sulphate ^{to it}

2

This solution dissolves
metallic Copper more
rapidly than by using
 H_2SO_4 & CuCl_2 as in
my applet -

& is cheaper as in the
latter case Ammonium
sulphate must be supplied
whereas in this method
only the cheaper
sulfuric acid
need be used, it also
has the advantage
that there being no

3

traces of free ammonia
in the solution, none
of the basic Cu Sulphate
disappears in the
leg. run —

Mr. Edison says that while the solution described
in F743 is slightly acid, traces of free
ammonia are to be found therein. 9/12/11 H.C.

Received from Mr. Edison, April 27, 1911

H.L.

Patent Series

Patent Application Files

Folio # 748 Reproducer

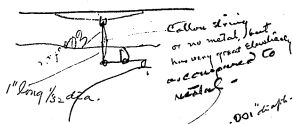
U.S. Patent #: 1055621

Primary Applicant: Edison, Thomas A

Date Executed: 5/16/1911

Inventor
 J. H. Morgan
 Rensselaer, N. Y.
 May 2, 1911

Revised
 May 4, 1911



The weight is held up by the elastic cord. This elasticity prevents the transmission to the diaphragm of ~~flashes~~ very weak sounds due to defects in the second. It also prevents the second from becoming sharp and metallic like by reason of diminishing the suddenness or abruptness of each second wave. It also serves to mellow the tone for this reason. It further

2

provides a means of controlling the quality of the tone by using cords of greater or lesser elasticity by increase of the ~~weight~~ diameter of the cord or lengthening it.

Another defect it eradicates is that with the usual metallic link it is impossible to get it perfectly straight, ~~as the weight~~ and as the weight used is never sufficient to straighten out a flat catenary or bow in the wire link. It produces a wave in the wire which is absent in the string which has no

Catenary—hence the sound
is not only louder but
more true—also the stored
elastic power, as the string being without
weight & imperatively speaking controls the
friction & so that it is much thicker.
The 2nd point in this
application is the ~~fact~~
use of a very light & flexible
diaphragm whereby the
weight necessary to use
is greatly diminished, thus
reducing the wear on the
recess

The diaphragm not only has Elasticity
as a whole but it is made
of material which is internally
highly elastic, thus requiring
a minimum of power to set it
in motion. The diaphragm is further
advantageous inasmuch as it
is stable & does not change

with use & the whole
is extremely light in weight
compared to those in general
use & at the same time
free from strains which permit
local buckling when given
great amplitudes—

The diaphragm is built up of
many layers of lacquered
bamboo paper each sheet
being about .001 inch &
thinly lacquered these are
dried in clean & then
assembled together to the
required thickness &
subjected to heat & pressure,
which locks them together

5-

with a 2" diameter the
diaphragm is .005" thick —

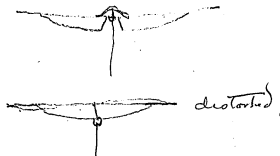
To this diaphragm is secured a
shell ~~and~~ a center piece of
Cork $\frac{1}{8}$ " thick at the center
tapering off to its edge &
on a 2" dia is ~~the~~ in
dia — This prevents the
center from flexing too
~~much~~ & forces a larger
part of the area of the
diaphragm to flex. The
curve of the cork being such
that the curvature of the
whole diaphragm is a section
of a circle.

instead of —————

if the cork was not used

6~

Another improvement is to
connect the ~~rod~~ tracking
lever cord to the center of
the diaphragm & not to the
Cork the latter being cut
away to permit of this
connection the advantage
gained by this is that
the power is applied so there
is no distortion of the diaphragm



This Centralizing is attained
by using a gap shaped cap on

7.

the back of the diaphragm into which the ring is connected. This not only serves to hold the ring (it gives sufficient area of contact with the diaphragm so there is no local compression of the diaphragm material whereby amplitude is lost,

The edges of the diaphragm are beveled on the usual rings of rubber —

Another improvement is the shape of the tracking lever with wide bearing nearly as wide as the lever is long — This prevents the record from throwing the

8

lever & tracking point sideways to a greater extent than now & prevents extra sounds from being generated —

Another improvement is the lengthening of the weight far beyond what is usual to prevent the tracking lever from having its angle too greatly changed when records are used which are not true also, to permit the tracking lever to move the weight sideways more easily in following the record by reason of the increased leverage obtained by lengthening the weight

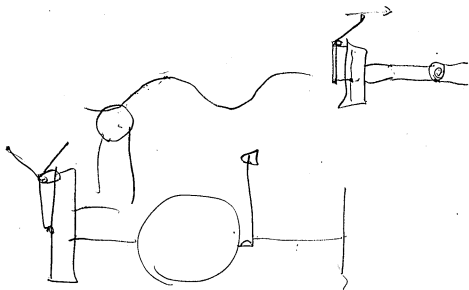
9

This causes the tracking ball or point to move nearly track in the center of the second groove - not on the sides -

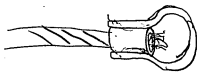
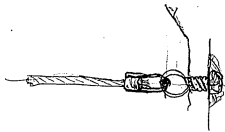
Another peculiarity of the lever is that one bearing permitting the weight to approach & recede from the second is done away with & a spring substituted. The object of which is to prevent a too & fro movement of the lever when running on irregular records which is impossible to prevent when an ordinary bearing is used. It being impracticable to make

10

a bearing with a very tight fit -

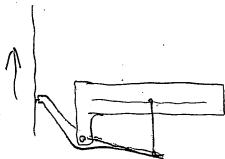


Rec'd by J. Bachmann from J. A. E.
May 6, 1911.



*W. R. R. R. R. R.
Mon 6/11*

*Rec'd by F. Bachmann from J. A. &
May 6, 1911.*



W. R. Rindley
May 6 1911

Recd by F. Bachmann
from P. G. S.
May 6, 1912.

Patent Series
Patent Application Files

Folio # 756 Battery Charge Indication

U.S. Patent #: 1045291

Primary Applicant: Holland, Walter E

Date Executed: 6/6/1911

REFER TO THIS NUMBER
IN YOUR REPLY

1615

MEMORANDUM

FRANK L. DYER,
ORANGE, N. J.

Mr. Smith:

12/29/10.

Referring to the attached memorandum, please get an extra copy of the Apple patent so that I can take it up with Mr. Edison. I do not think it would be worth while going into this matter unless we bought the patent, assuming that it is infringed.

FID/IWW

F. L. D.

Enc-

Miss K - Please order -

Apple 932057 - one copy.

Enclosed
12/30/10

Smith
Dec. 29, 1910.

Mr. Dyer:-

Mr. Edison's, or rather Mr. Walter Holland's invention on the device for indicating when a storage battery is nearly fully charged by means of counting the bubbles of gas passing through a fluid reservoir per second, is anticipated by the patent to Apple, No. 932,087, in the Storage Battery Binder, which I hand you. You will note that Claim 2 of this patent dominates our structure. Will you please advise me whether you think any steps should be taken to purchase the Apple patent.

Our structure is much more practical than Apple's, and I think we might file a specific application on our improved apparatus. As to the idea of indicating the condition of the charge directly by a pointer and a scale, on which I developed several ideas, as I told you, Mr. Edison says that they had tried similar schemes and found them impractical on account of the clogging of the passages with the potash from the battery solution. However, I should think we might file applications on some such ideas.

D. S.

Smith

DS-JS

Patent Series
Patent Application Files

Folio # 755 Method of Making Molds for Sound Records

U.S. Patent #: 1118114

Primary Applicant: Edison, Thomas A

Date Executed: 6/8/1911

Recd from
J.A.G.
May 22 1911
J. G. Bushman

Recd by
J.D. Lewis
May 22 1911 #1

Improvement in metallic
master records for moulding
plastic disc records —

Hitherto the thin electrolytic
after the wax record has
been backed up by a
thick metal disc the
two being secured by soldering

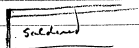
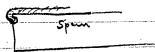
There are objectionable features
in securing the two together
by soldering as in nearly
every case the soldering
is uneven which results
in producing an uneven
surface to the metallic
master when subjected

to the great pressure necessary
to impress the record on
a plastic material. The
irregular contours are the cause
of some of the noises heard
when the record is
reproduced —

By this invention the necessity
of soldering the whole of
the two surfaces together
is done away with —
The electrolytic of the record
is faced with soft material
& the edges secured to the whole
by screws — It is then turned
this & polished,
The ^{back} disk on which it is to
be secured is also turned

3

two polished the two
are then laid together &
submitted to pressure.
The upturned edge is then
removed & the edges of the
two plates are soldered or
secured by spinning the edge
of the electrotype over the
thick plate.

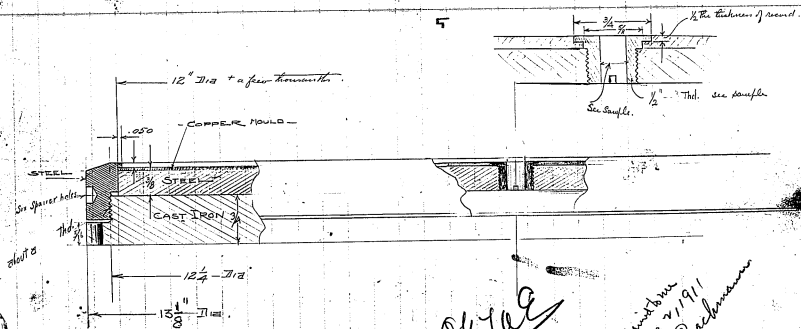


by this means, no cavities are
formed & the record is smooth
& free from cavity noises

4

The polished & perfection of the
surface of the 2 plates may
be diminished if a sheet of
tin foil is laid between them
but this foil should not
be thicker than about
.005 of an inch as its
liable to flow under the
pressure used —

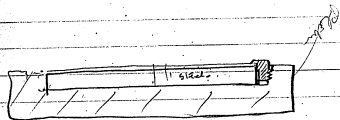
5



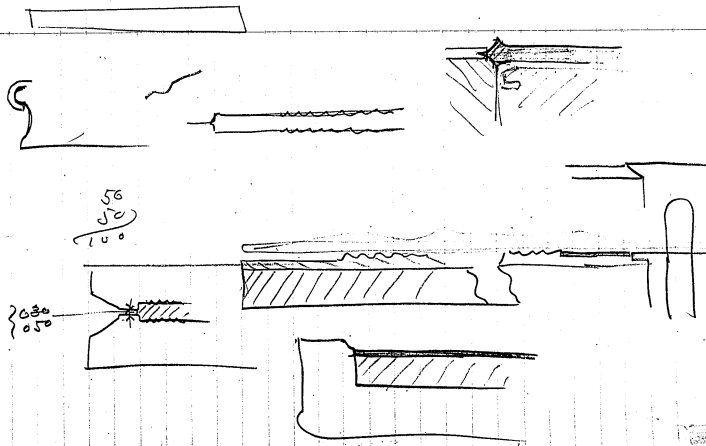
OKTAE

Experiment
June 2/1911
H. Bachman

Anderson J.
May 26 1911



.130 - .150"



Patent Series

Patent Application Files

Folio # 757 Combined Filling and Gas Valve for Storage Batteries

U.S. Patent #: 1165100

Primary Applicant: Holland, Walter E

Date Executed: 6/15/1911

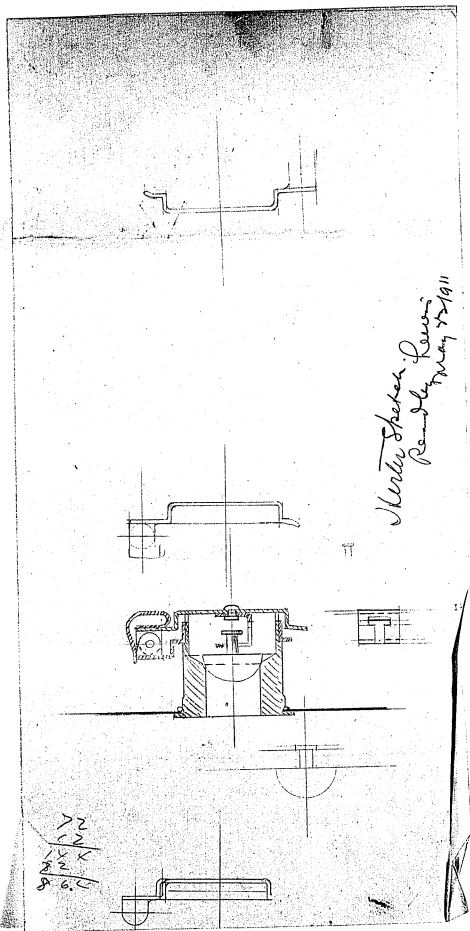
Rec'd Lewis
May 22, 1911

Get from Hexter the new
filler in which the gas-swing
valves & filler are combined
for patent

Get tracing from Hexter
May 22, 1911
Lewis

Received from T. A. Edison, May 22, 1911
HLE

Walter Spoken.
Rendley, Penn
May 7/1911



Patent Series
Patent Application Files

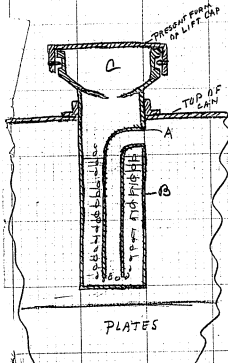
Folio # 759 Safety Device for Secondary Cells

U.S. Patent #: 1116893

Primary Applicant: Hutchison, Miller Reese

Date Executed: 6/19/1911

GAS VENT TO PREVENT POTASH FROM DEPOSITING OUTSIDE & ON TOP OF ANY EDISON CELL



The present can leaks itself & thus water and washer combined. -

The gas from the cell passes into a storage tank 4" and bubbles up through the pure water in "B" the height of said water being as indicated. The gas escapes through the top and the Potash is left in the water, when it can be reclaimed if desired by filling cell through the vent instead of through filling hole now used. The additional water into "C" will pass through B + A into cell thereby taking up Potash as it goes.

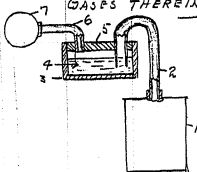
Witness
Dec 29 1910
Not Dec. 6
Sworn to before me

DEC 29 1910

Notary Public No. 2
NEW YORK COUNTY, N. Y.

Witness
Dec 29 1910

SAFETY DEVICE—
DEVICE TO PREVENT FLAME OR HIGH
TEMPERATURE GASES IN A VESSEL FROM BEING
DISCHARGED INTO A CONNECTING CHAMBER AT
SUCH HIGH TEMPERATURE AS TO IGNITE INFLAMMABLE
GASES THEREIN.



When it becomes advisable to connect a number of cells or battery to one common exhaust pipe to carry off the gases given off in charging or, as is advisable in ordinary practice, it becomes necessary to protect the system that an explosion of gas in any one of the cells, or in the several cells, is not communicated to other

cells. If such protection is not taken, an explosion in one cell might cause a serious explosion in all cells connected to the exhaust pipe, as well as in the exhaust pipe itself.

During the past week or so I have been carrying on experiments on the above safety device, with various means for overcoming this trouble.

I first made up an apparatus having #40 steel gauge interposed between the cell and the pipe leading to another cell. I "piped" in 1 cell by means of a spark plug, coil &c. But after I put several sheets of gauge in the direct strengthened by leather and gauge, the explosion came through and ignited the gas in the other cell.

So today I sketched and had made at the Lab, the apparatus illustrated above which is not drawn to proportion with the cell it is attached to.

In the figure, 1 is the cell. 2 the connecting pipe which is sealed with top of neoprene 3 and projects to within 1/4" of the bottom of the vessel. Note 4 was proved in tonight's trial. 5 reads the top and supported lead on pipe 6, connecting with drum.

H. H. H.
 3/9/11

H. H. H.
 3/9/11

In the experiment, no drum 7 was used, but a piece of cloth saturated with alcohol was directed to end of 6 as to become ignited. A flame was emitted through.

By 2, extending from the top of the water 4, acted as a water trap for gas escaping from Cell 1, so that such gas bubbled through and escaped through 6.

When, by means of a spark plug & wire, the gas in the cell was ignited, the flame, in passing through water 4, was cooled, and no flame issued from the end of 6, so that the alcohol soaked rag was not ignited.

By making the vessel 3 of larger diameter in relation to its height, it provides a very small head of water in the end of pipe 2 and water will not be projected from pipe 6 because it is too short at a point immediately adjacent from the pipe 2.

In larger size of cell, as in the submarine type, it may become necessary to put a baffle plate in the bottom end of leading in pipe 2, within the chamber 3, so that the outburst of gas from 1, on explosion, can be dissipated through the water 4 without attendant tendency to escape in large bubbles which cannot be cooled quickly.

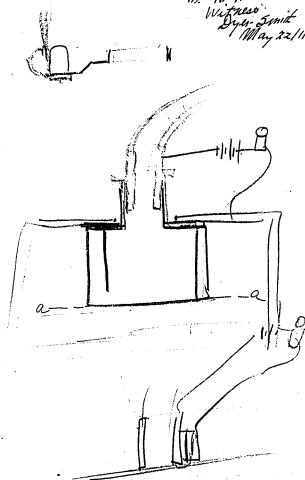
It may also be advisable to put an expansion chamber between 1 & 3 so that the burned gases may have a chance to expand somewhat before returning to the 2 pipe to use a short column of water as experienced from the fact that the end of pipe 2 is practically sealed by a substance having considerable inertia, may exert a disruptive effect on end of cell 1 in larger sizes.

In filling the cell with H_2O , it can be done through pipe 6, and the O_2 in 4 be drawn out into the cell, much as I have shown & described on page 9a of this work.

W.H. Johnson
3/8/11

W.H. Johnson 3/8/11

M. R. H.
W. H. Smith
Dyke Smith
May 22/11



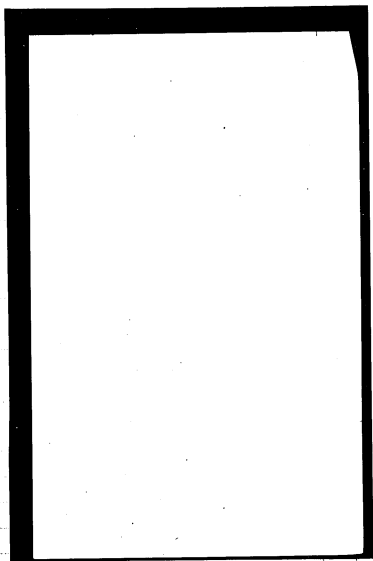
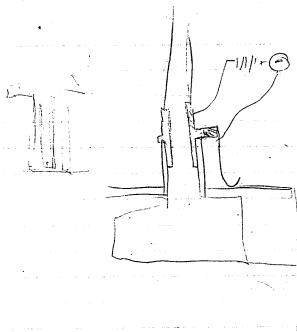
McSavaran

When Louis Stued in on
Swg. for the gas trap for
type of cells, I gave
him, through Hester,
pencil Swg I had
made.

Please return this
tube by Hester.

M. R. H.

July 15, 1911
tubes of dyke Smith
Mr. Hester
H.E.



Mr. Hutchison:-
I hand you herewith the file of Folio 759, which is an

I hand you herewith the file of Folio 759, which is an application filed in your name for Safety Devices for Secondary Cells. This application was allowed August 7, 1914 with the following claims:-

1. In apparatus of the character described, the combination with a battery cell, of fluid-containing means for extinguishing the flame of an internal explosion in said cell, and means for indicating the occurrence of such explosion, comprising a member adapted to be displaced by increased pressure through said fluid-containing means, substantially as described.
2. In apparatus of the character described, the combination with a battery cell, of a fluid-containing vessel so connected with said cell as to cause the passage of gas therefrom into said vessel below the fluid-level of the same, and a pivoted cover for said vessel.
3. In apparatus of the character described, the combination with a battery cell, of a fluid-containing vessel so connected with said cell as to cause the passage of gas therefrom into said vessel below the fluid level of the same, and a movable cover for said vessel located and arranged to be moved into open position by excess of gas pressure within said vessel.
4. In apparatus of the character described, the combination with a battery cell, of a fluid-containing vessel so connected with said cell as to cause the passage of gas therefrom into said vessel below the fluid-level of the same, a pivoted cover for said vessel, said cover being located and arranged to be moved into open position by excess of gas pressure within said vessel, and a spring so formed and positioned as to coact with said cover to resiliently hold the same in either closed or open position.
5. In apparatus of the character described, the combination with a battery cell, of a vessel fitting closely within the top of the opening of the same and provided with an exterior opening and an opening extending from the interior thereof into the space above the electrolyte in the said cell, and a removable cover for the exterior opening.
6. In apparatus of the character described, the combination with a battery cell, of a fluid-containing vessel mounted within the same, having a passage therefrom extending out through the top of the cell, said vessel having a vertical sleeve extending downwardly therein from an upper surface to a plane above the bottom of said vessel, said sleeve surrounding the lower end of said passage, and said vessel having circumferential openings connecting the space above the electrolyte in said cell with the interior of said vessel outside said sleeve and above the bottom of the same.

The KGH depends on the insulation
of the bell, not on the insulation of the
the device, and so on.

The specific structure covered by the claims is that of Figure 1 and there are no claims to the filling device shown in Figure 2. This device is not much different from that shown in the Edison patent No. 821,623 of May 29, 1906. I also note that no claims have been presented covering the idea of insulating the safety device from the battery can. Apparently, the only function of this insulation is to facilitate the operation of the signal associated with the filling device, and you have already told me that the filling operation cannot be performed satisfactorily in the manner illustrated in Figure 2 because there is no vent for the escape of air. Do you consider this insulation feature of importance? Possibly, a claim can be obtained on it by an amendment under Rule 78, or if it is of sufficient importance, the case might be permitted to forfeit and then renewed. If you think the invention is sufficiently protected by the claims allowed and recommend taking the patent out, I should like to have Mr. Edison's authorization to pay the final fee. I presume no foreign applications are to be filed. Do you consider any of the details shown in figures other than Figure 1 of sufficient importance to justify the filing of a divisional application?

W.

W.

[Handwritten signature]

Henry Canahan

Patent Series

Patent Application Files

Folio # 768 Concrete Furniture

Serial #: 639752

Primary Applicant: Edison, Thomas A

Date Executed: 7/18/1911

Folio No. 768

Serial No. 639,752

Applicant.

Address.

J. H. Edison

Title Concrete Furniture

Filed July 21, 1911

Examiner's Room No. 111

Assignee

Ass'g't Exec.

Recorded

Liber

Page

Patent No. 1,411,111

Issued

Sept. 15, 1915

ACTIONS.

1. By letter Patent August 23, 1911 23,1411
2. Amended July 24, 1912 17
3. Rejected Aug 5, 1912 18
4. Amended August 2, 1913 19
5. Rejection Sept. 13, 1913 20
6. Amended Sept. 2, 1914 21
7. Rejected Oct. 14, 1914 22
8. 23
9. 24
10. 25
11. 26
12. 27
13. 28
14. 29
15. 30

Vault

FRANK L. DYER,
Counsel,
Orange, New Jersey.

768

Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON
a citizen of the United States, residing and having a Post Office address at
Llewellyn Park, West Orange, Essex County, New Jersey

prays that letters patent may be granted to him for the improvements in

CONCRETE FURNITURE

set forth in the annexed specification; and he hereby appoints Frank L. Dyer
(Registration No. 560), of Orange, New Jersey, his attorney, with full
power of substitution and revocation, to prosecute this application, to make
alterations and amendments therein, to receive the patent, and to transact all
business in the Patent Office connected therewith.

Thos. A. Edison

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:-

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, Essex County, New Jersey, have invented certain new and useful improvements in CONCRETE FURNITURE, of which the following is a specification:-

My invention relates to the use of concrete for articles of furniture, and has for its objects the production of material suitable for this purpose, which is fire-proof, cheaper than wood, and not subject to many of the deteriorating influences which affect wood, and the provision of means for assembling and securing together the parts made of this material so as to form the completed article. More particularly, my invention relates to an improved phonograph cabinet constructed of reinforced concrete.

My invention consists generally in the use of concrete made of cement, preferably Portland, mixed with very light porous sand or other aggregates, such as pumice stone, charcoal, coke, or furnace slag made porous by steam or other gases being blown through the molten mass, and reinforced in a suitable manner, as by metallic perforated sheets or wire screen cloth. The pores of the porous aggregates are preferably of such small dimensions that the cement particles cannot enter them, and thus, the greater part of the bulk of the concrete, after it has

hardened and the water has been driven out, consists of air spaces. Thus, by employing porous aggregates having a loose, spongy, or cellular structure, I have been able to produce a concrete which is only a little heavier than wood and which is admirably adapted for the purposes desired.

The articles of furniture, if large, are preferably made in separate pieces, and means are provided for assembling and securing the pieces together, as, for example, by metallic parts molded in place in the separate pieces, so that upon assembling the pieces, they may be bolted together.

To show the manner in which my invention may be carried out, I have illustrated it as applied to the construction of a cabinet for phonographs, but obviously, my invention is applicable to furniture of all kinds.

In the drawings which accompany and form a part of this specification, and in which like reference characters are employed to designate like parts in the several views -

Figure 1 is a vertical sectional view of a phonograph cabinet constituting one embodiment of my invention;

Figures 2 and 3 are ^{enlarged 7/4/14} perspective views showing certain details of construction;

Figure 4 is ^{an enlarged sectional view 7/4/14} a section on the line 4-4 of Figure 1;

Figure 5 is ^{an enlarged 7/4/14} a view partly in section showing a portion of one of the cabinet pieces or parts at a stage in its construction immediately after the reinforcing

material has been laid in place;

Figure 6 is ^{an enlarged 7/2/4} a sectional view showing one form of a portion of a securing device;

Figure 7 is ^{an enlarged 7/4} a sectional view showing a modified form of a portion of the securing device; and

Figure 8 is ^{an enlarged 7/4} a sectional view through a hinged portion of the cabinet.

Referring to the drawings, at 1 is illustrated one of the two side pieces or parts of the cabinet. The front piece or part of the same is shown at 2, and the back piece or part at 3. The top member or frame is shown at 4 resting upon and supported by the frame formed of the side pieces 1 and the front and back pieces 2 and 3. The lid of the cabinet is shown at 5 and is hinged to the top piece 4 at 5'. Horizontal partitions or shelves are shown at 6, 7 and 8. The side pieces 1, front and back pieces 2 and 3, top piece 4, lid 5, and horizontal partitions or shelves 6, 7 and 8 are made of concrete which is preferably composed of Portland cement mixed with very light porous aggregates, such as pumice stone, charcoal, coke, or furnace slag, made porous by steam being blown through the molten mass, and reinforced by metallic perforated sheets or wire screen cloth, such as is shown at 9. Portions of the molds or forms for forming these parts into suitable shapes are shown at 10. Each of the side portions 1 is preferably formed with a pair of metallic tubular members 11 located near the edges of the side pieces which are vertical when in assembled position, thus providing vertical members at each corner of the main frame. Each of the tubular members preferably projects a short distance

above the main frame at each corner thereof, as is clearly shown in Figure 3. The lower ends of the tubular members 11 serve to receive the rollers 12 of the cabinet. The top piece 4 is provided at each corner with a recess ¹³ adapted to receive the projecting upper ends of the members 11 at each corner of the frame, and means is thereby provided for retaining the top member 4 in place on the main frame. In order to secure the pieces of the cabinet together, means are provided, as illustrated particularly in Figures 4, 5 and 6, consisting of bolts 14, nuts 15, washers 16 and 17, and metallic angle irons 19. The method of providing the securing means is as follows:- A pair of washers 16 and 17 are placed on each side of one of the interstices of the reinforcing fabric 9 and the bolt 14 threaded through the washers and the opening in the reinforcing fabric. The nut 15 is then screwed in place, and the reinforcing fabric, together with the bolt and its nut and the washers, are all set in place in the plastic mass of concrete, as is clearly shown in Figures 4, 5 and 6. After the concrete has set, the bolt 14 is unscrewed from its nut and from the hardened concrete. At any time thereafter, the bolt may be screwed into the nut for the purpose of retaining in place one of the angle irons 19.

In the modification shown in Figure 7, the bolt 20 is set in place with its head embedded in the concrete. In this figure, 21 and 22 show washers for the bolt on each side of the reinforcing fabric 9. In using this modification, the angle iron 19 is secured in place by means of a nut screwed on the bolt 20. The side pieces 1 and the end pieces 2 and 3 may be cast in such a form as to join together

er in a suitable manner, as is shown at 23, for the purpose of increasing the rigidity of the structure. The side pieces 1 are preferably molded with projections or ledges 24, 25 and 26 which serve the purpose of supporting the horizontal partitions or shelves 6, 7 and 8 respectively. For the purpose of securing hinges to those parts which are to be hinged together, wooden blocks 27 are molded in the pieces or parts, and the hinge 28 is secured to the wooden blocks 27 by means of screws 29, as is clearly shown in Figure 8. A door 30 is provided in the upper portion of the phonograph cabinet to furnish easy access to the phonographic apparatus which is contained in the cabinet. The top partition or shelf 6 is provided with an opening 31 through which the neck of the phonograph horn passes. The front piece 2 is provided with an opening 32 in its upper part intended to afford an outlet for the sound produced by the phonograph, and with an opening 33 in its lower end which may be provided with a door. The lower part of the cabinet may be used for any suitable purpose, such as storing records.

The features of construction described in connection with the phonograph cabinet may obviously be applied to other forms of household furniture and articles of like character. The articles after hardening and drying may be varnished over or painted in a suitable manner, either plain or in imitation of wood. If desired, the articles may be japanned by the methods employed in japanning iron articles, inasmuch as the concrete is not affected by the heat at the temperature employed in japanning ovens.

Having now described my invention, what I claim and desire to protect by Letters Patent is as follows:-

- Amended Draft*
1. A composition of matter, consisting of concrete composed of cement and porous aggregates, substantially as described.
 2. A composition of matter, consisting of concrete composed of Portland cement and porous aggregates, substantially as described.
 3. A composition of matter, consisting of concrete composed of cement and pumice stone, substantially as described.
 4. A composition of matter, consisting of concrete composed of Portland cement and pumice stone, substantially as described.
 5. A composition of matter consisting of concrete composed of cement and porous aggregates, the pores of the aggregates being substantially free from cement, substantially as described.
 6. A composition of matter consisting of concrete composed of Portland cement and porous aggregates, the pores of the aggregates being substantially free from cement, substantially as described.
 7. An article of furniture composed of reinforced concrete consisting of cement and porous aggregates, substantially as described.
 8. An article of furniture composed of a plurality of pieces of reinforced concrete consisting of cement and porous aggregates, substantially as described.

Cancelled 8/5/43

9. An article of furniture composed of a plurality of pieces of reinforced concrete, the said pieces being provided with means for securing the same together, substantially as described.

10. In an article of furniture, separate pieces of reinforced concrete, and means for securing the same together, substantially as described.

11. In a phonograph cabinet, side pieces, front and back pieces, and a top piece, some of said pieces being of reinforced concrete, substantially as described.

12. In a phonograph cabinet, side pieces, front and back pieces, and a top piece, all of said pieces being of reinforced concrete, substantially as described.

13. In a phonograph cabinet, a main frame of reinforced concrete and provided with members projecting upwards at its upper corners, an upper frame having a lid and provided with means for engaging the said projecting members, substantially as described.

Cancelled 9/2/44
14. In a phonograph cabinet, vertical side pieces, vertical front and back pieces, a top piece, and horizontal members, ^{*integrate 9/2/43*} some of the said vertical members being provided with projections for supporting the horizontal members, all of said pieces and members being of reinforced concrete, substantially as described.

Cancelled - Claims 10-20 July 22 1943
Insert B - Claims 11 9/2/43
Insert C - Claims 2, 3, 4 9/4/44

This specification signed and witnessed this 18th day of July 1901

Witnesses:

Thos. A. Edison

1. Henry Laushan

2. Anna P. Ketchum

Oath.

State of New Jersey }
County of Essex } ss.,

THOMAS A. EDISON, the above named
petitioner, being duly sworn, deposes and says that he is a citizen of the United
States, and a resident of Llewellyn Park, West Orange, Essex County,

New Jersey

that he verily believes himself to be the original, first and sole inventor of the
improvements in

CONCRETE FURNITURE

described and claimed in the annexed specification; that he does not know and
does not believe that the same was ever known or used before his invention or
discovery thereof; or patented or described in any printed publication in the
United States of America or any foreign country before his invention or
discovery thereof, or more than two years prior to this application; or patented
in any country foreign to the United States on an application filed more than
twelve months prior to this application; or in public use or on sale in the
United States for more than two years prior to this application; and that no
application for patent upon said invention has been filed by him or his legal
representatives or assigns in any foreign country.

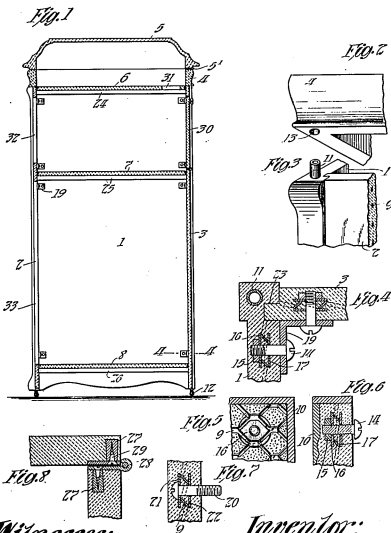
Thos. A. Edison

Sworn to and subscribed before me this 18th day of July 1901

ANNA P. KETCHUM
NOTARY PUBLIC
SUNNYSIDE, NEW YORK

[Seal]

Notary Public.



Witnesses:
 Frank D. Owen
 Henry Condon

Inventor:
 Thomas A. Wilson
 by Frank D. Owen
 His Atty.

8 131
Div. Room
Address only
"The Commissioner of Patents,
Washington, D. C."

2-260

Paper No. 2

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

SM

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

Aug. 24, 1911.
RECEIVED

Thomas A. Edison,
C/o Frank L. Dyer,
Orange, N. J.

Please find below a communication from the EXAMINER in charge of your application.

Serial No. 639,752, filed July 21, 1911, for Concrete Furniture.

E. B. Moore

Commissioner of Patents.

This case has been examined.

Claims 1 to 6 inclusive are for a composition of
latter. Claims 7 to 14 are for an article of furniture, and a
phonograph record cabinet, specifically. Applicant is required
to divide, limiting his application to one of these groups of claims,
each being for separate and distinct subject matters.

As showing the state of the art after a cursory ex-
amination see

Price, 948,770, Feb. 8, 1910, Tables;
English Pat. 2,027, of 1874, Chains;
Hills, 903,977, Nov. 17, 1908, D.R. Enclosed;
Kelz, 916,328, Mar. 23, 1909, " " "

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison)	
CONCRETE FURNITURE)	
Filed July 21, 1911)	Room No. 131.
Serial No. 639,752)	

HONORABLE COMMISSIONER OF PATENTS.

S I R :

In response to the Office action of August 23, 1911, please amend the above entitled application as follows:-

Cancel claims 1 to 6 inclusive, and substitute therefor the following claims:-

1. An article of furniture having parts consisting of concrete composed of cement and porous aggregates, substantially as described. *Cancelled 9/2/14*

2. An article of furniture having parts consisting of concrete composed of Portland cement and porous aggregates, substantially as described.

3. An article of furniture having parts consisting of concrete composed of cement and aggregates of pumice stone, substantially as described.

4. An article of furniture having parts consisting of concrete composed of Portland cement and aggregates of pumice stone, substantially as described.

5. An article of furniture having parts consisting of concrete composed of cement and porous aggregates, the pores of the aggregates being substantially free from cement, substantially as described.

6. An article of furniture having parts consisting of concrete composed of Portland cement and porous aggregates, the pores of the aggregates being substantially free from cement, substantially as described.

Add the following claims:-

Cancelled 5/2/72
15. In an article of furniture, a piece or member of reinforced concrete having fastening means extending through the reinforcing, whereby the reinforcing assists in retaining the fastening means in place, substantially as described.

16. In an article of furniture, the combination of a piece or member of concrete, an internal screw threaded member embedded therein, a perforated member, and a screw or bolt extending through the perforated member and threaded into the internal screw threaded member to secure the perforated member to the piece or member of concrete, substantially as described.

17. In an article of furniture, the combination of pieces or members of concrete, each having an internal screw threaded member embedded therein, a perforated member for connecting the pieces or members of concrete together, and screws or bolts extended through the perforated member and threaded into the internal screw threaded members for securing the connecting member to the pieces or members of concrete, substantially as described.

Canceled 8/4/12
18. A cabinet having vertical members or pieces of concrete, vertically disposed tubular members molded therein, and rollers for the cabinet mounted in the lower ends of the tubular members, substantially as described.

10 Canceled 8/4/12
19. A cabinet having vertical members or pieces of concrete, vertically disposed tubular members molded therein, and a top piece or member having recesses adapted to receive the upper ends of the tubular members, whereby the top piece or member is positioned, substantially as described.

Canceled 8/4/12
20. A cabinet having vertical members or pieces of concrete, vertically disposed tubular members molded therein, a top piece or member having recesses adapted to receive the upper ends of the tubular members, whereby the top piece or member is positioned, and rollers for the cabinet mounted in the lower ends of the tubular members, substantially as described.

REMARKS

The requirement for division has been complied with by the cancellation of claims 1 to 6 inclusive. Applicant reserves the right to file a divisional application on the subject matter of these claims.

The new claims submitted are believed to be properly examinable with original claims 7 to 14 inclusive.

Action on the merits is requested.

Respectfully submitted,

THOMAS A. EDISON

Orange, New Jersey,

By

Frank L. Dyer

July 24th, 1912.

His Attorney

Div. 8, Room 131

"The Commissioner of Patents,
Washington, D. C."

MSB

2-280

Paper No. 4

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON

Thomas A. Edison,

August 5, 1912.

o/o Frank L. Dyer,

Orange, N. J.

768
Please find below a communication from the EXAMINER in charge of your application.
#639,752 filed July 21, 1911 for Concrete Furniture.

9-5431

E. B. Moore

Commissioner of Patents.

Amendment of July 25, 1912 is of record.

Claims 1, 2, 3, 4, 5, 6, 7 and 8 are rejected as aggregations as the particular character of the cement used in no way cooperates with the structure of the furniture. The composition of the cement is in itself subject matter of invention. See Lande 299,810, June 3, 1884 and Parshall 328,722, Aug. 4, 1885, class 106-244.

Claims 1 to 8, inclusive, are rejected as met in terms by Price of record in view of Parshall and Lande cited.

Claims 9 and 10 read directly upon Price of record and are rejected.

Claims 11 and 12 are rejected on Keltz or Hills of record in view of Price. To construct the cabinet of Keltz or Hills of cement would be suggested by Price.

Claims 13, 14 and 19 are rejected on Faust 835,508, Nov. 13, 1906 or Myers 252,053, Jan. 10, 1882. Book cases, Knock Down in view of Price. All applicant has done is substitute cement for wood in Myers or Faust which would be suggested by Price. To imbed member D of Myers or F of Faust in cement is not invention.

#639,762 ----- 2.

Claims 18 and 20 do not distinguish over the above references and reasons and moreover are aggregations as the casters do not cooperate with the other structure set forth.

Claims 15, 16 and 17 are rejected on Reinle 701,816, June 3, 1902, or Paullé, 760,805, May 24, 1904, show cases, in view of White 875,396, Dec. 31, 1907 or Craig 977,710, Dec. 6, 1910, Class 72-105.

See also Donaldson 641,942, Jan. 23, 1900 and Smith 507,562, Oct. 31, 1893, Class 72-20.

To substitute cement for the material, glass, used in Paullé or Reinle using the bonding means of White or Craig would not involve invention.

All the claims are rejected.

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON,)
CONCRETE FURNITURE,) Room No. 131.
Filed July 21, 1911,)
Serial No. 639,752.)

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to the Office action of August 5, 1912, please amend the above entitled case as follows:

Cancel claims 9 to 13 inclusive.

Claim 14, line 4, after "with" insert

- integral - ; renumber this claim as claim 9.

Cancel claims 15 to 18 inclusive.

Claim 19, line 3, after "in" insert

- and extending thereabove - ; renumber this claim as claim 10.

Cancel claim 20.

Add the following claim:

1. In an article of furniture, the combination of a piece or member of reinforced concrete, a pair of washers embedded in said piece or member, one washer on either side of the reinforcing, an internal screw threaded member embedded in said piece or member adjacent one of said washers, and a screw or bolt threaded through the washers and the reinforcing and into said internal screw threaded member, said screw or bolt being partially embedded in said piece or member and extending outwardly therefrom, substantially as described.

REMARKS

It is submitted that claims 1 to 8 are not aggregations as they merely describe an article composed of a certain material or an article having parts or pieces composed of such material. There is certainly no aggregation of elements in any of these claims. The issue with respect to these claims should apparently be whether

invention is involved in making an article of furniture, or parts thereof, of the special kind of concrete specified. Applicant strongly contends that the use of such a concrete for this purpose does involve invention. In the first place no reference has been cited which discloses an article of furniture constructed of concrete consisting of cement and porous aggregates. Moreover, no reference has been cited which even discloses a concrete consisting of cement and porous aggregates. In the concrete disclosed by both Parshall and Lande of record, the pumice stone and slag are pulverized or reduced to a fine powder and do not exist in the concrete as porous aggregates. A concrete such as disclosed in these patents would, therefore, be very heavy and compact and its use in the manufacture of articles of household furniture would be impracticable as such articles would be entirely too heavy and cumbersome. The combining of the substances as described by Parshall results in a material of stiff consistency which is not capable of being poured, as is the case with the concrete mixture disclosed by applicant, but is applied with a trowel or the like. The fine pulverizing of the pumice stone of Parshall's composition and the slag of Lande's composition serves to destroy the porous structure thereof and renders it impossible to obtain a concrete of the requisite lightness. The concrete of Lande is

adapted for use only in making heavy articles such as the park bench disclosed by Price, and not for articles such as household furniture which are frequently moved from place to place. As set forth in the last four lines of page 1 and the first six lines of page 2, the greater part of the bulk of applicant's concrete after it has been hardened and the water has been driven out, consists of air spaces and such concrete is only a little heavier than wood. As the Examiner is doubtless aware, there are numerous decisions to the effect that where the substitution of one material for another results in a superior product and simplifies and cheapens the manufacture of such product, such substitution amounts to invention. The following extracts from decisions on this point are cited by way of example:

" "The substitution of one material for another may amount to invention where a superior product results from the substitution."
Eureka Blotter Bath Company vs. Nicholas et al.
157 F. 556.

"The use of a different material in constructing an article previously patented involves invention where it produces a useful result, increased efficiency, or a decided saving in operation."
George Frost Co. et al. vs. Samstag et al.
180 F. 739.

"The substitution of one material for another involves invention where the substituted material is used in a relation in which it had not before been used and in which it accomplished new and very beneficial results."
119 F. 505.

The use of applicant's concrete as described results in an article of furniture which, while only a little heavier than wood, is much stronger and more durable than wood. Moreover, the manufacture of such articles is rendered much simpler and cheaper than where wood is used.

Claim 9, (former claim 14) as now presented, is believed to clearly differentiate from Faust, Myers and Price of record. None of these patents discloses vertical members of reinforced concrete provided with integral projections for supporting the horizontal members. Moreover, none of these references discloses a phonograph cabinet.

Claim 10 (former claim 19) clearly distinguishes from the references of record by specifying that the vertically disposed tubular members are molded in the vertical members of concrete and extend thereabove, and that the top piece is provided with recesses adapted to receive the upper ends of the tubular members whereby the top piece is positioned. By the construction described in this claim, the cabinet may be much more easily assembled than the structure disclosed in either Faust or Myers.

New claim 11 presented herewith is drawn specifically to the construction and arrangement of the securing means provided in each of several members of the cabinet described in the specification, whereby these members may be readily secured together. This claim is believed to be clearly patentable over the references of record.

For the above reasons, further consideration and allowance of the claims as now presented are requested.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Baker
his Attorney,

Orange, New Jersey,

August 2, 1913.

WAH-KGX

Div. 33. Room 70

Address only
"The Commissioner of Patents,
Washington, D. C."

2-200

CMR/AHS

Paper No. 5 (Reg.)

All communications respecting this
application, should give the serial number,
U. S. Pat. Office, and title of invention.

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON

SEP 13 1913

MAILED

Sept. 13, 1913

Frank L. Dyer,

Orange,

N. J.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, #639,752, July 21, 1911, Concrete Furniture

Thomas A. Edison
EDM:J

Commissioner of Patents.

Responsive to amendment of Aug. 4, 1913.

This case is examined de novo in this Division.

The following new reference is cited:

Reinstein (British) 25,108 of 1909, 155-Chairs.

It is believed that the use of a concrete of a particular kind instead of the ordinary concrete is an obvious substitution of materials and nothing more. If it is desired to make an article of furniture light, it would not be invention to choose any of the old and well known aggregates, such as ground slag, pumice stone, instead of stone. Whether such aggregates be whole or ground is not regarded as a matter of patentability at all, but of choice. The ground pumice stone or slag certainly would not lose materially its property of lightness, that is, the specific gravity thereof would not be materially affected by grinding, because it is considered the pumice stone in its divided state would still be porous, that is, every particle thereof no matter how small would still be honeycombed. It is believed the only way whereby the specific gravity of such substance could be materially increased would be by great compression. This is true of ground coke in the manufacture of electric light carbons. It is not seen

why the same could not hold in a similar substance, as pumice stone.

Furthermore, it is not believed necessary necessary to show an article of furniture made of porous aggregate and cement, for the reasons that aggregates of such composition are old in the references of record, and for the reason that furniture has been made of paper or papier mache, concrete, or stone-like compositions, as may be seen in the English patent to Reinsteins, or Price, of record.

Claim 1 is therefore rejected on Price, of record, or upon the new reference to Reinsteins, in view of Parshall or Laude, of record.

Claims 2, 3, 4, 5, 6, 7, and 8 are rejected upon the same references. It is believed that applicant has nothing patentable in the use of this particular kind of composition in an article of furniture over ordinary concrete, and that the invention lies in the composition per se or in the specific structure of the article itself.

Claim 9, as amended, fails to define anything patentable over the claim as originally presented and it is therefore rejected on the references of record for the reasons of record.

Claim 10 is rejected upon the same references.

Claim 11 is not believed complete. The member which coacts with the screw or bolt to provide an attachment or connection with other adjacent pieces should be set forth.

The claim may then be allowed.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

CONCRETE FURNITURE

Room No. 131

Filed July 21, 1911

Serial No. 629,752

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of September 12, 1913, please amend the above entitled case as follows:-

Page 2, line 24, after "are" insert - enlarged -. Line 26, cancel "a section" and insert - an enlarged sectional view -. Line 28, cancel "a", first occurrence, and insert - an enlarged - .

Page 3, lines 2, 4 and 6, cancel "a", first occurrence, and insert - an enlarged. - .

Page 4, line 4, after "recess" insert - 13 - .

Cancel claims 1 to 10 inclusive and renumber claim 11 as claim 1.

Add the following claims: -

2. The combination of a piece of reinforced concrete, a perforated member embedded in said piece adjacent the reinforcing, an internal screw threaded member imbedded in said piece adjacent the reinforcing, and a screw or bolt extending through said perforated member and the reinforcing and threaded into said internal screw threaded member, said screw or bolt extending outwardly from said piece, substantially as described.

C

3. The combination of a piece of reinforced concrete, a perforated member embedded in said piece adjacent the reinforcing, and a screw or bolt extending through said perforated member and the reinforcing and having one end portion disposed within said piece and the other end portion extending outwardly from said piece, the end of the screw or bolt within said piece being provided with means coacting with said perforated member and the reinforcing to prevent outward movement of the screw or bolt with respect to said piece, substantially as described.

4. The combination of a piece of reinforced concrete, a pair of washers embedded in said piece, one on either side of the reinforcing, and a screw or bolt extending through said washers and the reinforcing and having one portion disposed within said piece and the other end portion extending outwardly from said piece, the end of the screw or bolt within said piece being provided with means coacting with said washers and the reinforcing to prevent outward movement of the screw or bolt with respect to said piece, substantially as described. -

REMARKS

It is thought that the objection to claim 1, former claim 11, made in the last Office action is unwarranted. It does not seem necessary to include in this claim the member (shown in the drawing as angle iron 19) which coacts with the screw or bolt to provide an attachment or connection with an adjacent piece, as this member,

before the assembling of the pieces, is not necessarily secured to either of them, as will be evident from a perusal of lines 20 to 29, page 4 of the specification. The Examiner is accordingly requested to waive the objection to this claim.

New claims 2 to 4, which are drawn along the lines of present claim 1, are believed to be clearly allowable and are thought necessary to adequately protect applicant in his invention.

An allowance of this application is requested.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Roper

His Attorney

Orange, New Jersey

September 2, 1914

WAH-JS

DIV. 33 Room 70

Address only

"The Commissioner of Patents,
Washington, D. C."
and not any official by name.

2-260

72-120

Paper No. 8(Rej.)

All communications respecting this
application should give the serial number,
date of filing, title of invention, and
name of the applicant.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON

Oct. 14, 1914.

Frank L. Dyer,

Orange, N.J.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison: Ser. No. 639,752; filed July 21, 1911;

Concrete Furniture.

Thomas Ewing
Commissioner of Patents.

4-262

Responsive to amendment of Sept. 3, 1914.

In addition to the references of record, present claim 1,
former 11, is rejected on

Kelly, 358,203, Feb. 22, 1887, 72-120.

New claims 2, 3 and 4 are rejected on the same reference.

Examiner, Div. 33.

Received from T. A. Edison. May 22, 1911

#2
J. H. H.
May 22, 1911.

2.

The object of this invention is to produce various articles of furniture by the use of Portland Cement or mixed with very light porous sand and aggregates, reinforced by metallic perforated sheets or wire screen cloth. The article of large being made in separate pieces & assembled together by means of metallic pieces welded in the separate pieces in such a way that upon assembling these pieces may be bolted together.

As an illustration of the manner this invention can be carried out, a Cabinet for phonographs is shown.

Show the separate pieces, then the whole, the reinforced etc.

Claim the use of Portland Cement in combination with porous sand & porous aggregates, such as pumice stone, charcoal, coke, or furnace slag made porous by steam being blown thru the matter mass.

The pores are to be such that the cement ^{particles} will not be capable of entering the pores & thus the major bulk of the concrete will be air spaces after the cement has hardened &

the water dried out
The total weight of the
article being only a
little heavier than
wood, after

Household furniture &
articles of like character
as easily & cheaply
produced & have great
durability -

The articles after hardening
& drying are varnished or
painted with various paints
plain or in imitation of
wood, also they may be
japaned & submitted to heat
as in japanning, now articles
as the concrete is not

affected at the temperature
used in japanning ovens

Claims furniture etc
of reinforced concrete
consisting of Portland cement
with porous sand & aggregate

2nd Several pieces with device
for holding or securing together

3rd ~~Use of~~ ^{porous} use of slabs
such as pumice stone,
also charcoal, coke etc. -

Have we previously made
any application for this

than the phone cabinet

F768

McEdison

There are numerous patents
applied for on Cement Furniture
Some of which applications
must be acted on before January
4th or be forfeited.

What do you wish to do
in this connection?

12/27/12

WMA

only drop to
C. A. Smith

Since they are in office
a fee is paid we will
take them out
when allowed

Remember Cement works
have a sub Co. who are info
lots of things

Patent Series

Patent Application Files

Folio # 767 Phonographs

Serial #: 639716

Primary Applicant: Moore, Sherwood T

Date Executed: 7/19/1911

Folio No. 767Serial No. 639, 716

Applicant.

Address.

Sherwood T. Moore149 High StWest OrangeN. J.Title PhotographsFiled July 21, 1911.

Examiner's Room No. _____

Assignee T. H. Edison, Inc.Ass'g't Exec. July 19, 1911. Recorded July 21, 1911. Liber Q. 87 Page 196

Patent No. _____

Issued _____

ACTIONS.

1 Office letter Sept. 9, 1911. 162 Amended Aug. 2, 1912 173 Rejected Sept. 37-1912 18

4 _____ 19

5 _____ 20

6 _____ 21

7 _____ 22

8 _____ 23

9 _____ 24

10 _____ 25

11 _____ 26

12 _____ 27

13 _____ 28

14 _____ 29

15 _____ 30

VAULT

FRANK L. DYER,

Counsel,

Orange, New Jersey.

92767

Petition.

To the Commissioner of Patents:

Your Petitioner **SHERWOOD T. MOORE**,
a citizen of the United States, residing and having a Post Office address at
#149 High Street, West Orange, in the County of Essex and State
of New Jersey,

prays that letters patent may be granted to him for the improvements in

PHONOGRAPHS

set forth in the annexed specification; and he hereby appoints Frank L. Dyer
(Registration No. 560), of Orange, New Jersey, his attorney, with full
power of substitution and revocation, to prosecute this application, to make
alterations and amendments therein, to receive the patent, and to transact all
business in the Patent Office connected therewith.

Sherwood T. Moore

- S P E C I F I C A T I O N -

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, SHERWOOD T. MOORE, a citizen of the United States and a resident of West Orange, in the County of Essex and State of New Jersey, have made a certain new and useful invention in PHONOGRAPHS, of which the following is a description:

My invention relates to phonographs and more particularly to an improved stylus mounting therefor.

In order to obtain a large volume, it is desirable to employ a heavy reproducer or floating weight and a record material of considerable hardness. Such a record material wears away the usual sapphire stylus to a considerable extent so that it is extremely desirable to employ a stylus made of an extremely hard material such as diamond; but, while diamond has been suggested for this use there have been difficulties attending the mounting of the same in an economical and efficient manner. The principal object of my invention is to provide an improved mounting whereby the ordinary diamond splints which may be obtained in the market may be cheaply and firmly secured in place in their supports. Other objects of my invention will appear more fully in the following specification and appended claims:

In order that my invention may be more fully understood, attention is hereby directed to the accompanying drawing forming a part of this specification and in which -

Fig. 1 represents the side elevation of a reproducer provided with a stylus lever having a stylus mounted therein according to my invention;

Fig. 2 represents a side elevation of a block of material from which the stylus lever is to be formed, a stylus being mounted in place therein and the outline of the lever being indicated in dotted lines;

Fig. 3 represents a bottom plan view of the same, the outline of the stylus lever being likewise shown in dotted lines;

Fig. 4 represents a vertical cross-sectional view of the stylus mounting taken by a plane extending through the centre of the opening in which the stylus is secured; and

Fig. 5 represents a central vertical sectional view taken at right angles to that shown in Figure 4.

In all of the views, like parts are designated by the same reference numerals.

Referring to the drawings, my improved stylus is formed from a diamond splint indicated at 1. Splints such as that illustrated in suitable size may be obtained in the market and are of various shapes being more or less irregular and rough in appearance. In the formation of the stylus from such a splint, I prepare only one end of the splint since the roughness and irregularity of the body thereof are of advantage in securing the splint in place. Having obtained the splint, I form the same with a tapered end 2 having a rounded point 3 adapted to travel in the groove of a sound record. The tapered end of the stylus may be formed in any suitable way, as for example,

by the method set forth in the application of Thomas A. Edison, Serial No. 551,128, filed on March 23, 1910.

After the splint 1 has been formed as described above, an opening 4 is formed in a block 5 of the material from which the stylus lever is to be formed, this opening being preferably of such a size that the stylus when inserted therein engages the upper and side walls thereof so that it will not readily work loose in use. A slot or kerf 6 is then formed in said block so as to intersect the opening 4. This slot is preferably made of considerable length and depth so as to form a channel extending about the stylus from one side to the opposite side thereof. As shown in the drawings, an open slot is formed in a quasi-segmental form in the forward lower end of the lever. The stylus having been mounted in the opening 4 so as to rest in engagement with the upper and side walls thereof, solder or braze is applied to the slot or kerf 6 and the opening 4 so as to braze the stylus in place. Any suitable solder or braze may be used for this purpose. By means of the slot 6, this solder is permitted to flow freely about the stylus into the opening 4 so that the stylus is securely held or anchored in place. I next cut away the superfluous material of the block on the dotted lines indicated in Figures 2 and 3 to form the stylus lever into the proper shape. Obviously, however, the stylus lever might be formed of the desired shape before the stylus is mounted therein.

In Figure 1, I have shown my improved stylus mounting applied to a reproducer of a type described and claimed in the application of Thomas A. Edison, Serial No.

627,592 filed on May 18, 1911. In this figure, 7 represents the stylus lever which is pivotally mounted on a floating weight 8 supported from the diaphragm casing 9 as by a spring 10. The numeral 11 represents the connection between the stylus lever and diaphragm. My invention may obviously be applied to any other type of reproducer than that shown.

While I have shown a preferred embodiment of my invention, numerous modifications fall within the scope of the same. I wish, therefore, not to be limited to the exact details shown and described, but what I claim and desire to protect by Letters Patent is as follows:

1. As a new article of manufacture, a stylus lever having a stylus brazed therein, substantially as described.
2. In a device of the class described, a stylus support having an opening therein and a stylus soldered in said opening, the said support having also a recess intersecting said opening to ensure a proper distribution of the solder about said stylus, substantially as described.
3. In a device of the class described, a stylus support having an opening therein and a diamond stylus having an irregular unfinished portion brazed in said opening, the said support having also a slot or kerf intersecting said opening and extending to the exterior of said support to ensure a proper distribution of the braze or solder about said stylus, substantially as described.
4. In a device of the class described, a stylus support, having an opening therein and a diamond stylus

having an irregular unfinished portion brazed in said opening and engaging the walls thereof, the said support having also a slot or kerf intersecting said opening and extending to the exterior of said support to ensure a proper distribution of the braze or solder about said stylus, substantially as described.

5. The method of mounting a stylus in the support which consists in forming in the support an opening to receive the stylus and a slot intersecting said opening, placing the stylus in the opening in the support, and applying solder to said opening and slot to secure the stylus in position, substantially as described.

6. The method of mounting a stylus in its support which consists in forming in the support an opening of a size adapting the body of the stylus to approximately fit the same and also a slot intersecting said opening, placing the body of the stylus in the opening in the support, and applying solder to said opening and slot to secure the stylus in position, substantially as described.

7. The method of mounting a stylus in its support which consists in forming in the support an opening provided with an end wall, said opening being of a size adapting the body of the stylus to approximately fit the same, forming a slot intersecting said opening, placing the body of the stylus in the opening in the support in engagement with said end wall, and applying solder to said opening and slot to secure the stylus in position, substantially as described.

This specification signed and witnessed this 19 day of July 1901

Witnesses:

Sherwood J. Moore

1. Fredrick Bachmann

2. Anna P. Klehr

Oath.

State of New Jersey } ss.,
County of Essex

SHERWOOD T. MOORE, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of West Orange, Essex County, New Jersey

that he verily believes himself to be the original, first and sole inventor of the improvements in PHONOGRAPHS

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

Sherwood J. Moore
Sworn to and subscribed before me this 19 day of July 1901

[Seal]

NOTARY PUBLIC, STATE OF NEW JERSEY
Notary Public.

Div. 2 Room 379

2-280

Address only
"The Commissioner of Patents,
Washington, D. C."

Paper No. 2-111
All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

J.H.Y.)s.

WASHINGTON

Sept. 9, 1911.

Sherwood T. Moore,
c/o Frank L. Dyer,
Orange, N. J.

Please find below a communication from the EXAMINER in charge of your application.

for Phonographs, filed July 21, 1911, serial number 639,716.

767

E.B. Moore

Commissioner of Patents.

Claims 1 to 4 inclusive are drawn to a article while claims
5 to 7 ~~xx~~ inclusive are drawn to a method. Inasmuch as the
article could be produced by other methods than that claimed
the article and the method are held to ~~xx~~ be separate inventions
and division is required according to the provisions of rule 42.

In amending this case applicant should consult.

Edison Aug. 7, 1900, 655,480 (161-10)

Edison June 17, 1899 430,278 (161-10)

Maddonald Oct. 21, 1902 711,706 (161-2)

English patent to Jungbecker et al, May 31, 1902

12,456, (161-11) English patent to Oakford, Sept. 26,

1903 20,768, (161-10).

IN THE UNITED STATES PATENT OFFICE

Sherwood T. Moore)

PHONOGRAPHS)

Room No. 379.

Filed July 21, 1911)

Serial No. 639,716)

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of
September 9, 1911, please amend the above entitled case as
follows:-

Cancel claims 5 to 7 inclusive.

R E M A R K S

The Examiner's requirement for division has
been complied with, and action on the merits of the claims
now in the case is respectfully requested. The right is
reserved to file a divisional application on the subject
matter of the canceled claims.

Respectfully submitted,

SHERWOOD T. MOORE-

By

Frank L. Byers

His Attorney

Orange, New Jersey

August 2, 1912.

Div. 23. Room 379

2-200

Address only
"The Commissioner of Patents,
Washington, D. C."
J. H. D. -Sub.

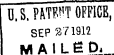
Paper No. 1, Reg. 1.

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

Sept. 27, 1912.

Sherwood T. Moore,
Care Frank L. Dyer,
Orange, New Jersey .



Please find below a communication from the EXAMINER in charge of your application.

for Phonographs, filed July 21, 1911, serial number 639,716 .

67-5823

E. B. Moore

Commissioner of Patents.

Claim 1 is rejected upon Jetter, July 30, 1912,
#1,034,387, (181-11), also upon either Edison of record or Head,
May 15, 1906, #820,926, (181-11), or Levin, Sept. 19, 1911, #1,003,
474, (181-11), Soldering is held to be the patentable equivalent
of cementing.

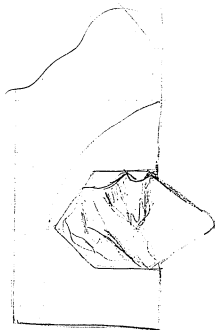
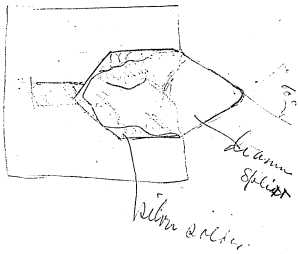
Claim 2 is rejected upon Jetter, Levin or Head for the reasons
given.

Claims 3 and 4 are rejected upon the references and reasons
given in view of any diamond stylus as in Jungbecker of record.
No invention is found in providing ^a rough surface on the
diamond as such is a common expedient in cementing and soldering
when a strong connection is desired .

Recd from SAC
May 28, 1941.
H. Dickinson

Rochester
May 22-1941

See Moore & patent the new
way of setting the diamond
in the new deep producer by
Praying in split holder



Braced (Pavement) (1)
 Split to permit flow
 of water.
 See int.



Patent Series

Patent Application Files

Folio # 770 Electroplating Apparatus

U.S. Patent #: 1016875

Primary Applicant: Edison, Thomas A

Date Executed: 7/24/1911

4th
March 1911

The object of this invention is to save the metals lost in the wash waters of my process of making nickel flake for storage tanks described in my patent No.

After the drum upon which a plating of nickel is deposited it is withdrawn from the tanks & passes to a spraying device which washes off the film of the plating solution which clings to the drum. This solution is composed of sulphate of nickel & is lost in the wash waters. The same thing occurs when the

2

layer of copper is plated over the nickel in this case the electrolyte is sulphate of copper with some sulphuric acid. This is lost in the wash water.

To save these metals & save them separately, a swinging gate is arranged at the wash trough so that when the drum comes from the nickel bath the wash water passes to a tank & when the drum comes from the copper bath the gate is changed to throw the wash water into another tank. Thus

Keeping the two solution
separate.

The regeneration & saving of
the nickel is as follows

In case of the Copper
solution it passes through
several troughs filled with
Iron turnings from the factory.
These decompose the solution
depositing metallic copper in a
spongy powdery form while
the acid radical combines
with the iron to form ferrous
sulphate which remains in
solution. The final water
pass to the silver free of
Copper —

In the case of the nickel

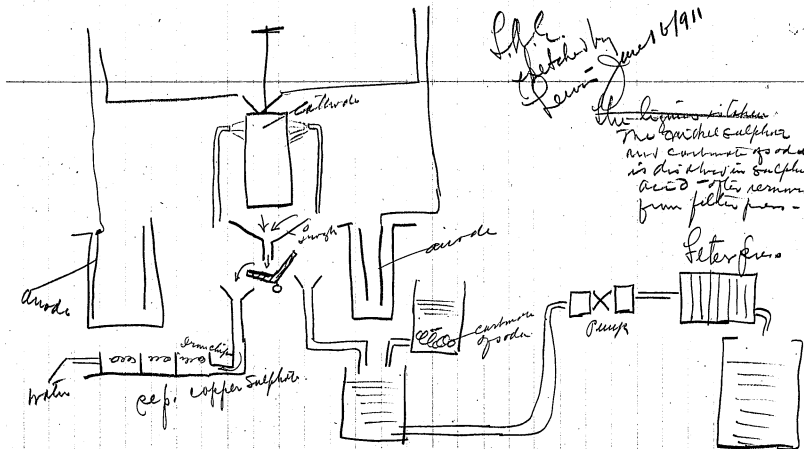
This passes to a small tank
into which a predetermined
stream of solution of
either Carbonate or Caustic
soda passes precipitating the
nickel as Insoluble Carbonate
or Hydroxide in a milky form.
The sulphuric acid combined
with the soda remains
dissolved. The whole of this
milky solution is pumped
continuously to an ordinary
filter press & the salt obtained
in cakes which can then
be made into fresh sulphate
of nickel with sulphuric

acid used to renew the
electrolyte of the plating
solution which is diminished
in quantity in the process -

715

Record from T. A. Edison, May 22, 1911

HE



Exp. sketch by
Perrin June 1911

The liquid is taken
The cathode sulphur
and converted to soda
is dissolved in sulphuric
acid - after removing
from filter press -

Filter press

Patent Series
Patent Application Files

Folio # 772 Storage Battery Motor Sets

Serial #: 642072

Primary Applicant: Edison, Thomas A

Date Executed: 8/1/1911

Folio No. 772

Serial No. 642,872

Applicant.

Address.

Thomas A. Edison

Title Storage Battery motor sets

Filed Aug. 3 1911

Examiner's Room No. 105

Assignee

Ass'g't Exec.

Recorded

Liber

Page

Patent No. Abandoned

Issued

ACTIONS.

1. Rejected Nov. 11, 1911 16
2. Amended Nov. 8, 1912 17
3. Rejected Jan. 6, 1913 18
4. Amended Jan. 3, 1914 19
5. Rejected Feb. 10, 1914 20
6. Amended Feb. 3, 1915 21
7. Final rejection March 3, 1915 22
8. Amended Feb. 13, 1916 23
9. Final Rejection March 9, 1916 24
10. Associate Patent Office to 25
11. Dyer to Holden - Jan 10, 1917 26
12. 27
13. 28
14. 29
15. 30

Frank L. Dyer
FRANK L. DYER,
 Counsel,
 Orange, New Jersey.

Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON
a citizen of the United States, residing and having a Post Office address at
Llewellyn Park, West Orange, Essex County, New Jersey

prays that letters patent may be granted to him for the improvements in

STORAGE BATTERY-MOTOR SETS

set forth in the annexed specification; and he hereby appoints Frank L. Dyer
(Registration No. 560), of Orange, New Jersey, his attorney, with full
power of substitution and revocation, to prosecute this application, to make
alterations and amendments therein, to receive the patent, and to transact all
business in the Patent Office connected therewith.

Thos. A. Edison

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:-

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, Essex County, New Jersey, have invented certain new and useful improvements in STORAGE BATTERY-MOTOR SETS, of which the following is a specification:-

My invention relates to storage battery-motor sets, and particularly to apparatus of this character intended for use upon vehicles for the propulsion of the same. The object of my invention is to produce apparatus of this kind capable of being supplied at a much lower cost than heretofore, and more particularly to reduce the initial cost of electric delivery wagons so as to bring them within the means of small dealers who deliver articles from their stores to their customers.

The present practice in the manufacture of electrically driven vehicles, such as trucks and automobiles, is to use a relatively large number of cells and high voltage. For example, the voltages hitherto used in ordinary practice range from 40 to 50 volts for the small electric runabouts to as high as 75 to 80 volts for the large motor-driven trucks. In order to obtain such voltages, a comparatively large number of storage battery cells are required. Such an equipment is liable to troubles from

grounds or leakage in the wiring, batteries or motors, on account of the relatively high voltages employed, and is unnecessarily expensive. I have found that by certain modifications of the motor construction, a storage battery of much lower voltage can be used efficiently for the above purpose, thus securing a relatively inexpensive equipment and all the advantages of a low voltage at the battery and motor.

My invention consists in the employment of a relatively small number of storage battery cells capable of discharging at a very high rate without injury to the battery, and in a radical departure from the ordinary design of motors, in order to adapt them to the high discharge rate batteries and to enable them to be efficiently operated by a relatively small number of cells, particularly where the vehicles are to be used on roads having excessive grades and necessitating greatly increased power at times. In ordinary practice, the battery employed is more expensive than the motor, and it is consequently very desirable to diminish the number of cells of the battery to a minimum, and this may be done by modifying the design of the motor in such a way that although its cost is increased, the added cost will be but a fraction of the cost of the battery such as is ordinarily employed with a motor designed according to ordinary practice. Inasmuch as a relatively low voltage battery is to be used, the motor must be designed to carry safely a very large current and to stand a considerable overload for long periods of time. The motor in my improved storage battery-motor set is constructed of abnormally low internal resistance, and all of the current-carrying conductors are abnormally large in cross

section. The motor armature and commutator have an abnormal design as related to each other. Instead of the length of the commutator being less than the length of the armature, as is customary in ordinary practice, the commutator is made equal to or greater than, and preferably substantially twice as long as the armature. The brush area for taking off the current is two or more times greater than in ordinary design, so that the loss in voltage when ascending steep grades is not greater than the loss in voltage on the level in the case of a motor of ordinary design. The amount of copper used to energize the field is made double or nearly so that employed in motors as ordinarily designed. By employment of my invention, I have constructed a twenty-volt motor suitable for propelling a 1500 lb. delivery wagon, and the extra expense of the lengthened commutator and extra copper in the windings is more than overcome by saving of a number of cells of storage battery costing three or more times as much. My improved motor is so designed that the heating is enormously diminished, sparking is eliminated, and the whole combination of battery and motor is of the most effective and reliable character. The alkaline ^{nickel-cadmium 70%} or Edison type of storage battery is particularly adapted for use in a storage battery-motor set of this character, because this type of battery is capable of discharging at an enormously high rate without injury to the battery. For example, batteries of this type stand repeated discharges at 240 amperes, or 300 percent more than normal. As is well known, discharge rates above normal are very injurious to batteries of the lead type. I prefer to make use of a

battery of cells of the Edison type in which the thickness of the pockets and the diameter of the tubes have been reduced so as to permit an increased number of plates to occupy a given space and thereby afford an increased area of active surface per unit of volume or weight.

I have illustrated one embodiment of my invention in the drawings which accompany and form a part of this specification, and in which -

Figure 1 is a plan view of the running gear of a vehicle equipped with my improved storage battery-motor set; and

Figure 2 is a view partly in longitudinal section through the motor.

Throughout the several views of the drawing, like reference characters are employed to designate like parts.

Referring to the drawings, a set of storage batteries 1 connected in series by suitable connectors 2 is shown. The motor is shown at 3 and is connected in series with the battery by conductors 4 and 5. A controller 6 of ordinary construction is provided in one of the conductors, as for example, 5. The outline of the body of the vehicle is shown at 7, and the storage battery may be carried in the said body. The wheels of the vehicle are shown at 8, 9, 10 and 11. The motor 3 is mounted in any suitable manner upon the running gear 12. The motor 3 is provided with a sprocket wheel 14 secured to its shaft. A countershaft 15 is revolvably mounted in bearings 15' on the running gear. The countershaft 15 is provided with sprocket wheels 16, 17 and 18 secured thereto. The spro-

ket wheel 17 is situated in line with the sprocket wheel 14 of the motor and the chain drive 19 is provided for driving the sprocket wheel 17 from the sprocket wheel 14. The vehicle wheel 8 has secured to it and concentrically therewith a sprocket wheel 22, and the vehicle wheel 10 has secured to it and concentrically therewith a sprocket wheel 23. The chain drive 21 connects the sprocket wheels 22 and 18 and the chain drive 20 connects the sprocket wheels 23 and 16. Any other suitable form of mechanism may be utilized for driving the vehicle wheels 8 and 10 from the motor 2.

The motor comprises a casing 30 provided with bearings 31 and 32 in which the shaft 33 is journaled. Pole pieces 34, preferably of laminated iron, are mounted in the casing in any suitable manner, and these pole pieces are provided with field windings 35 preferably of heavy copper strip. The motor illustrated is a two-pole motor. The armature core 36 preferably of laminated iron is mounted upon shaft 33 and carries the armature windings 37. The armature winding has preferably not more than one turn of wire per coil. The commutator segments 38 are mounted upon the shaft 33 and are suitably connected to the armature windings 37. Brushes 39, preferably of carbon, are provided and are supported in brush holders 40. The brush holders 40 are provided with binding posts 41 or other suitable means for connecting the motor to the conductors 4 and 5. The motor is preferably series connected. The abnormal length of commutator as compared with the length of armature is evident from an inspection of Figure 2, and it will also be noted that a relatively large brush area

is provided. Inasmuch as there is only one turn per coil of the armature, the voltage between the segments of the armature is reduced to a very small amount in a 20-volt winding, and therefore, there is no tendency whatever to spark or flash under heavy loads.

Actual service conditions show that an electric vehicle having a normally low current of say 75 amperes when running on the level, may require from 200 to 250 amperes when climbing, or on bad roads. A motor of ordinary design with a relatively small commutator and light winding in the armature and field is very liable to break down or burn out. A motor constructed in accordance with my invention will withstand these extreme conditions of overloading without any difficulty whatever, owing to the low voltage and large cross section of conductors used. My improved motor may be exposed to water and extreme weather conditions without any damage whatever, and furthermore, a motor of this character is well adapted for continuous use in unskilled hands. Owing to the low voltage used in my improved system, it is not necessary that the motor be made completely water tight. It may be left relatively open so that active and free ventilation on all parts of the winding and the ^{commutator} ~~motor~~ is permitted. This is a valuable feature when the motor is subjected to heavy and continuous overloading, for in such a case a completely enclosed motor is liable to damage from overheating, while an open motor is not injured.

In apparatus embodying my invention which I have had constructed and tested, a delivery wagon was

equipped with a battery of 16 A-8 Edison cells, the voltage of which varied from about 18 volts to 12 during the tests, the total weight of the outfit was about 2310 pounds, and the internal resistance of the motor was about .026 ohms.

Having now described my invention, what I claim and desire to protect by Letters Patent of the United States is as follows:-

1. In a storage battery-motor set, the combination with an electric motor having an abnormally extended area of brush contact at the commutator, and a storage battery electrically connected to said motor and capable of enormously high discharge rates, substantially as and for the purposes set forth.
2. In a storage battery-motor set, the combination of an electric motor of abnormally low internal resistance and with an abnormally extended area of brush contact at the commutator, and a storage battery electrically connected therewith and capable of an enormously high discharge rate, substantially as and for the purposes set forth.
3. In a storage battery-motor set, the combination of an electric motor having an abnormally extended area of brush contact with the commutator, and a storage battery of the Edison-type electrically connected therewith, substantially as and for the purposes set forth.
4. An electric motor for use with storage battery sets, comprising an armature and field, and a commutator connected to the armature and of a length substantially the same or greater than the armature, as and for the purposes set forth.

5. An electric motor for use with storage battery and adapted for operation at unusually speeds, sets comprising a field, the windings of which are insulated copper strips of abnormally low resistance, and an armature mounted to rotate with respect to the field, and a commutator connected to the armature of a length substantially equal to or greater than the armature, as and for the purposes set forth.

6. In a storage battery-motor set, the combination of an electric motor having field and armature windings of abnormally large cross section, and a storage battery electrically connected therewith and capable of an enormously high discharge rate, substantially as and for the purposes set forth.

Done at New York, N.Y. this 17th day of June 1922

Insert B-13/14. Claims 1 & 2

Insert C-Claim 3-21/2/14

This specification signed and witnessed this 1st day of August 1901

Witnesses:

Thomas A. Edison

1. Henry L. Latham

2. Anna B. Kuhn

Oath.

State of New Jersey } ss.,
County of Essex

THOMAS A. EDISON, the above named
petitioner, being duly sworn, deposes and says that he is a citizen of the United
States, and a resident of Llewellyn Park, West Orange, Essex County,
New Jersey

that he verily believes himself to be the original, first and sole inventor of the
improvements in

STORAGE BATTERY-MOTOR SETS

described and claimed in the annexed specification; that he does not know and
does not believe that the same was ever known or used before his invention or
discovery thereof; or patented or described in any printed publication in the
United States of America or any foreign country before his invention or
discovery thereof, or more than two years prior to this application; or patented
in any country foreign to the United States on an application filed more than
twelve months prior to this application; or in public use or on sale in the
United States for more than two years prior to this application; and that no
application for patent upon said invention has been filed by him or his legal
representatives or assigns in any foreign country.

Thomas A. Edison

Sworn to and subscribed before me this 1st day of August 1901

NOTARY PUBLIC

[Seal]

Notary Public.

772

642,073
174

Sheet 1

Div.

Fig. 2

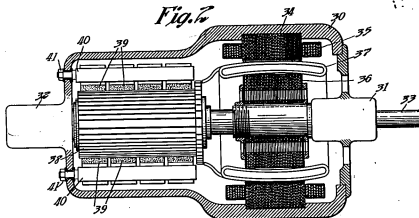
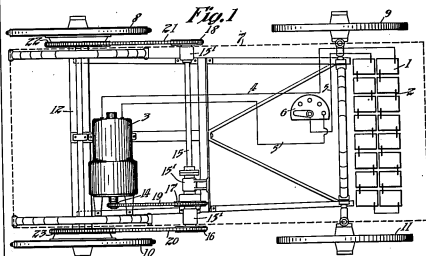


Fig. 1



Witnesses:
Frank Lewis
Harry Lushan

Inventor:
Thomas A. Lewis
by Grant & Perry
His Atty.

Div. -26... Room -105
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Washington, D. C."

2-280

VOC

Paper No. -2-

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DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON

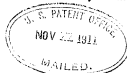
November 11, 1911.

Thomas A. Edison,

c/o Frank L. Dyer,

Orange, New Jersey.

Please find below a communication from the EXAMINER in charge of your application.
for Storage Battery-Motor Sets, filed Aug. 3, 1911, Serial No.
642,072.



777

E. B. Moore

Commissioner of Patents.

Claims 1, 2 and 6 are rejected as manifest aggregations of a motor and a storage battery. If a storage battery is only capable of furnishing one and a half volts there would furthermore be no invention required to select a translating device adapted to run in connection therewith; it would be the only obvious thing to do. Aside from the merits involved these claims are essentially vague and indefinite, - "abnormally extended area" (claim 1) and "abnormally low internal resistance" (claim 2) do not mean anything structurally, and in claim 3 "battery of the Edison type", besides the same objection of indefiniteness, presents the further objection that the Office does not understand what type is meant, and, moreover, whatever is now meant it would probably be subject to change and variation as the art advances.

Claims 3, 4 and 5 are rejected as for well-known relations existing in a certain class of dynamos between the design of the commutator and that of the armature. Note, for instance, Parsons, 344,542, June 29, 1886, Bipolar, and diagram 4 of "Die Gleichstrommaschine" by Arnold, Berlin, 1907, Julius Springer, the description of which on page 184 sets forth that the useful length of the commutator is 39 cm, whereas the useful length of the winding is given as 26 mm. These three claims are rejected on either of the references given, and as furthermore presenting only matter that would be obvious to any machine designer.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison)	
STORAGE BATTERY MOTOR SETS)	
Filed August 3, 1911)	Room No. 105.
Serial No. 642,078)	

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of November 11, 1911, please amend the above entitled case as follows:-

Claim 3, line 2, after "motor" insert - of abnormally low internal resistance and - . Line 3, change "a" to - an alkaline - . Line 4, cancel "of the Edison type".

Claim 4, line 2, after "sets" insert - and adapted for operation at moderate speeds - .

Claim 5, line 2, after "sets" insert - and adapted for operation at moderate speeds, - .

Add the following claim: -

Cancelled 9/3/14

7. In apparatus of the class described, the combination of a driven member required to transmit torque varying through wide limits, ^{a series} (an electric motor) operatively connected to said member for driving the same, ^{a storage battery} a storage battery for supplying current to the motor and capable of discharging at a rate greatly in excess of normal, said excessive discharge rate being necessary and sufficient to operate the motor to cause the driven member to transmit its maximum

An internal resistance less than
current carrying capacity
torque, and said motor having a sufficiently low internal resistance and sufficient large commutator and brush contact area to enable the motor to operate when carrying said excessive discharge without excessive loss in voltage in the motor, substantially as described. -

R E M A R K S

The Office action of November 11, 1911 has been carefully considered. Applicant's invention involves a marked departure from standard practice in storage battery motor sets used in the propulsion of vehicles and for similar purposes, and his improved motor involves features differing in a marked degree from standard design. It is thought that these features are properly expressed by the expressions "abnormally extended area" and "abnormally low internal resistance" contained in certain of the claims, the word "abnormally" meaning a marked departure from standard practice. The Examiner is therefore requested to withdraw his objection to these terms.

Claim 3 has been amended to overcome the Examiner's objection to defining the battery as a "battery of the Edison type". The patent to Parsons, No. 344,542, shows apparatus very different from applicant's apparatus and intended for a very different purpose. This patent shows a generator intended to be operated at an excessively high speed, that is to say, at a speed of from 10,000 to 25,000 revolutions per minute. Applicant's motor is intended to be operated at ordinary motor speeds, one of the machines embodying the invention having been constructed to operate at a speed of 1700 revolutions per minute. The distinction

that the motor is adapted to operate at moderate speeds has been introduced into claims 4 and 5. The Examiner also refers to "Die Gleichstrommaschine" by Arnold, and applicant has had his representative look up this reference in the Patent Office and has been informed that the citation is incorrectly given in the Office letter. The diagram intended to be cited is understood to show a turbo generator, and the argument made in connection with the patent to Parsons is believed to be applicable to the structure shown in Arnold. Applicant appears to be the first to use a storage battery capable of enormously high discharge rates combined with an electric motor of abnormally low internal resistance and abnormally extended area of brush contact with the commutator, and by this combination he has attained certain useful results which are set forth fully in the specification.

In new claim 7 added by the above amendment, an attempt is made to set forth the relation between the maximum torque transmitted by the driven member and the excessive discharge rate of the storage battery. Applicant's invention has been thoroughly tested in a practical manner and is believed to have great merit.

Reconsideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Lyon

His Attorney

Orange, New Jersey
November 8th, 1912.

Y00

Paper No. 4

All communications respecting this
application should give the serial number,
date of filing, and title of invention.DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

January 6, 1913.

Thomas A. Edison,

c/o Frank L. Dyer,

Orange, N. J.

Please find below a communication from the EXAMINER in charge of your application.
for Storage Battery-Motor Sets, filed Aug. 3, 1911, Serial No.
642,072.

6-5231

E. B. Wilson

Commissioner of Patents.

In response to amendment of Nov. 9, 1912.

The objection urged against the expressions "abnormally extended area" and "abnormally low internal resistance" seems to be proper and is therefore repeated. Further, the expressions employed in the new claim 7 "at a rate greatly in excess of normal" and "sufficiently low internal resistance and sufficiently large commutator and brush contact area, etc." are equally vague, indefinite and objectionable.

It is also true that standard practice with regard to area of commutator and brush contact surface is to proportion the area to the current, and it does not appear that the applicant has in any manner whatsoever departed from such standard practice. See, for example, the General Electric Company's Bulletin No. 4,350, Pub. April, 1904, by the Power and Mining Department, especially the illustration on page 4 and the list of plating dynamos at the top of page 8.

Claims 1, 2, 6 and 7 are rejected as obvious aggregations of motor and storage battery. See the first paragraph of the last Office letter. Claim 7 in fact covers merely a driven member on which the load varies widely and a storage battery and motor adapted to work together and to do the work necessary. No one

can monopolize such a combination and, in fact, to employ a storage battery and a motor which were not adapted to work together and would not do the work would be contrary to the dictates of reason.

The above claims cover an alleged combination clearly divisible from the generator claims numbered 3, 4 and 5 and division is therefore required between the two groups.

Claims 3, 4 and 5 are rejected upon the references of record and upon the General Electric Bulletin, above.

No further action on the merits will be given until the requirement for division has been complied with.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

STORAGE BATTERY MOTOR SETS

Room No. 105.

Filed August 3, 1911

Serial No. 642,072

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of
January 6, 1913, please amend the above entitled case as
follows:-

Page 3, line 22, after "alkaline" insert -
nickel-iron - .

Rewrite the claims as follows: -

1. In apparatus ~~of the class described~~, the combination of a driven member required to transmit torque varying through wide limits, a series electric motor operatively connected to said member for driving the same, and a storage battery for supplying current to the motor capable of discharging at a rate in excess of normal, necessary and sufficient to operate the motor to cause the driven member to transmit the maximum torque required, ^{7/24/12} and said motor having low internal resistance in both field and armature windings and having brush and commutator contact area at least twice as great as required by the rules of ordinary design, ^{to make motor run} substantially as described.

2. In apparatus of the class described, the combination of a driven member required to transmit torque vary-

ing through wide limits, a series electric motor operatively connected to said member for driving the same, and a storage battery for supplying current to the motor capable of discharging at a rate in excess of normal, necessary and sufficient to operate the motor to cause the driven member to transmit the maximum torque required, ^{2/3/15} and said motor having low internal resistance and having brush and commutator contact area sufficiently great to substantially eliminate sparking even when the motor is supplied with current at the aforesaid excessive rate, substantially as described. -

REMARKS

The claims have been rewritten with a view to setting forth applicant's invention more accurately and to avoid the Examiner's objections. It is believed that these claims cannot be considered as aggregations inasmuch as the elements recited in each of them coact to produce a unitary result. In this connection the Examiner's attention is called to a recent decision of the Circuit Court of Appeals for the Seventh Circuit, *Krell Auto Grand Piano Co. of America vs. Story & Clark Co. et al.*, 207 F. R., 946, see particularly 951, in which the Court makes the following statement:-

"In another sense (which, in the interest of accurate terminology, might well be taken as the exclusive sense) 'aggregation' means that the claims, in and of themselves, independently of the prior art, show that the elements are incapable of coacting to produce a unitary result."

The General Electric Company's Bulletin cited shows merely a self-excited (presumably shunt) or separately

excited generator designed to generate currents of large amperage at low voltages, and while a long commutator is used, this commutator appears to be designed in accordance with the rules of ordinary design to take care of the large amount of current carried by it. Similarly, in the patent to Parsons cited, the high speed generator shown is provided with a long commutator, but there is no suggestion that the brush contact area is made abnormally great, as is the case in applicant's invention. In applicant's improved motor, the brush contact area is made two or more times greater than the ordinary design - see specification, page 3. In other words, applicant has not merely increased the brush contact area sufficiently to carry the current used, but has increased it in a much greater proportion. The commutator brush area in applicant's improved apparatus is far in excess of that heretofore considered necessary and generally adopted to carry the current used. By using such an abnormal contact area relative to the voltage and current, applicant is enabled to reduce the resistance at the commutator to the smallest possible amount and at the same time, if desired, the pressure of each carbon brush upon the commutator may be diminished as compared with the pressure ordinarily used, so that the resistance of the bridge of carbon across the commutator bars may be made very high, thus tending to reduce the armature waste in momentarily short-circuited coils. The employment of the excessive brush contact area substantially eliminates sparking, even on heavy loads, and renders unnecessary the use of commutating poles or other devices to reduce sparking or to save the commutator from cutting and wearing.

Applicant's invention involves a marked departure from previous practice, has proved to be of great utility, and is believed to be deserving of patent protection.

Reconsideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Dyer

His Attorney

Orange, New Jersey

January 3rd, 1914

H. L. J. S.

Div. 26 Room 106

Address only
"The Commissioner of Patents,
Washington, D. C.,"
and not any official by name.

2-200

VCC

Paper No. 6

All communications respecting this
application should give the serial number,
date of filing, title of invention, and
name of the applicant.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON

February 10, 1914.

JSH

Frank L. Dyer,

Orange,

New Jersey.



Please find below a communication from the EXAMINER in charge of the application of
Thomas A. Edison, Serial No. 642,072, filed Aug. 3, 1911, for
Storage Battery Motor Sets.

c 6-2011

Thomas Edison
Commissioner of Patents

In response to amendment of Jan. 5, 1914.

The new claims are rejected as unpatentable combinations of motor and storage battery. The ground of this rejection is that it involves merely the skill to be expected of the electrician to use battery and motor which are adapted to work together in the old combination.

As to the proportions which the claims specify in the motor design, it is held that if there be departure from "the rules of ordinary design", such departure is one in degree and not in kind.

It is, however, old, as shown by the references of record, to employ a commutator whose length is greater than that of the armature core; thus the applicant has not departed from ordinary practice in this respect. As to the brush contact area, he alleges departure, but does not state either what the ordinary practice allows in amperes per cm² nor what he himself employs.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

STORAGE BATTERY MOTOR SETS

Filed August 3, 1911

Room No. 105.

Serial No. 642,072

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of February 10, 1914, please amend the above entitled case as follows:-

- ✓ Claim 1, line 8, cancel "and".
- ✓ Claim 2, line 8, cancel "and".

R E M A R K S

The Examiner states that the ground of rejection of the claims is that it involves merely the skill to be expected of an electrician to use a battery and motor which are adapted to work together in an old combination. Applicant has not merely used a battery and motor adapted to work together, but in the combinations claimed there is a motor especially adapted for use with a battery having certain characteristics set forth in the claims, the design of the motor being abnormal as compared with ordinary practice, and the entire combination being capable of accomplishing a certain desired result with an efficiency and economy constituting a marked advance in the art. Certain advantages of applicant's improved battery-motor set have been pointed out in the specification and in prior arguments, and especial attention is directed to the following points:- Decreased liability to leakages and grounds because of possibility of using low voltages; diminution of heating;

substantial elimination of sparking; light brush load; reduction of wear of brushes, due to the decreased brush pressure permissible. Applicant's improved battery motor set is well adapted for continuous use in unskilled hands.

It is well recognized by the courts that a change in proportion of parts may amount to invention if a new function or a particular new and useful result are accomplished thereby. In applicant's improved battery motor set, the motor is abnormal in design as compared with ordinary practice in several respects, and by the use of such a motor with a suitable battery the particular new and useful results mentioned above are attained.

The Examiner states that it is old to employ a commutator whose length is greater than that of the armature core. An inspection of the claims will show that applicant is not relying for the patentability of his invention upon the use of a long commutator. In one of applicant's improved battery motor sets, applicant used for the motor brushes a special kind of high conductive metal carbon rated by the manufacturer to carry normally 100 amperes per square inch. In the said motor as designed by applicant, such great brush contact area was provided that the current density was only about 45 amperes per square inch at maximum load. The Examiner is requested to again consider carefully the argument accompanying the amendment of January 3, 1914.

Reconsideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Elger

His Attorney

Orange, New Jersey

February 3, 1915

HL-JS

Div. 26, Room 105

Address only
"The Commissioner of Patents,
Washington, D. C.,"
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JSH

2-260

CJD

Paper No.
All communications respecting this
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date of filing, title of invention, and
name of the applicant.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

March 3, 1915

Frank L. Dyer,

Orange,

New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, filed Aug. 3, 1911, for Storage Battery-Motor Sets.

Ser. No. 642,072.

Thomas Ewing
Commissioner of Patents.

6-5251

In response to amendment filed Feb. 4, 1915.

The results enumerated, and alleged to be new and useful, are no doubt useful, but are not new, and are attained by the obvious application of the skill to be expected of the electrical artisan. As before stated, it would be contrary to the dictates of reason to use motor and battery which were not capable of taking care of the temporary overloads and adapted to work together. Moreover, now that the applicant has stated what current density he uses, it is possible to cite references showing that he has departed little if at all from common practice. Arnold in "Die Gleichstrommaschine" cited, Vol. 1, pp. 147 and following, gives data of a number of machines, of which only five of the first thirteen are designed for higher densities than 45 amperes per square inch. See especially machine #12, with density of 32.8, and also #7, #8, #9 and #13.

The claims are therefore rejected, and this action may be considered final for the purposes of appeal if applicant so desires.

Acting Examiner - Division 26.

See Paper at re v S.S. White Electric Mfg Co
220 C.C. 349 - also 228 F 30

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

STORAGE BATTERY MOTOR SETS

Room No. 105.

Filed August 3, 1911

Serial No. 642,072

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of March 3, 1915, please amend the above entitled case as follows:-

Claim 1, line 1, change "of the class described" to - for the propulsion of an electric vehicle - . Last line, after "design" insert - for vehicle motors - .

Add the following claim: -

3. In a storage battery motor set for the propulsion of an electric vehicle, the combination of a driven member adapted to transmit torque varying through wide limits, a series electric motor of low internal resistance operatively connected to said member for driving the same, and a low voltage storage battery for supplying current to the motor capable of discharging at a rate in excess of normal, necessary and sufficient to operate the motor to cause the driven member to transmit the maximum torque required, said motor having its commutator length equal to or greater than its armature length and having its field coils of at least twice the current carrying capacity and its

brush and commutator contact area at least twice as great as is required by the rules of ordinary design for vehicle motors, substantially as described. -

R E M A R K S

The ground of rejection set forth in the Office letter of March 3, 1915 is not entirely clear, but it is apparently the Examiner's position that applicant's improved storage battery motor set lacks invention, inasmuch as he states that the results are attained by the obvious application of the skill to be expected of the electrical artisan. The Examiner does not, however, state what portion of the prior art the electrical artisan would make use of in obtaining these results. The Examiner also states that "it would be contrary to the dictates of reason to use motor and battery which were not capable of taking care of the temporary overloads and adapted to work together". Applicant is not claiming merely motor and battery capable of taking care of the temporary overloads and adapted to work together, but is claiming a combination including a battery having certain defined characteristics and a motor having certain structural features adapting it especially for use with the battery for the purpose of driving a member transmitting torque varying through wide limits. The combination claimed by applicant is new and involves a marked departure from the practice usual at the time of filing this application in battery and motor design for electrically driven vehicles.

The Examiner calls particular attention to the data of certain machines described by Arnold in "Die Gleichstrommaschine". The data of these machines have been carefully considered. None of these machines is a motor for propelling a vehicle. The prior practice in the design of motors

for vehicle propulsion was to make the motor as compact as possible, to use a relatively large number of cells and high voltage, and to provide a relatively small commutator, and it is to the practice in designing such storage battery motor sets that applicant particularly refers in comparing his improvements. It is to be noted that the statements in applicant's communication dated February 3, 1915 regarding the particular example of a motor used by him in the embodiment of his invention does not form a part of the disclosure of the application but is merely given as an example. In this example, it is stated that the current density is about 45 amperes per square inch at maximum load, and that the brushes used were of a special kind of high conductive metal carbon rated by the manufacturer to carry normally 100 amperes per square inch. The brush densities which are calculated from the examples given in Arnold are for normal loads, not maximum loads, and there is nothing to show that anything but ordinary carbon brushes were used, and presumably at that time ordinary carbon brushes were used. As the Examiner is no doubt aware, various improvements have been made in so-called metal carbon or graphite brushes which have vastly increased the carrying capacity of these brushes. The comparison, therefore, of applicant's current density with the densities employed in the machines described in Arnold is not a fair one, inasmuch as there is nothing to show that brushes of the same conductivity were employed in the two instances, and furthermore, as stated

above, these machines described in Arnold are not vehicle motors. It is, of course, well known that in the manufacture of small motors, brushes of a size greater than the ordinary practice are some times used for reasons of commercial expediency. This is probably the case in the motor described on page 147 of Arnold (Machine No. 1).

This machine, however, is used to drive a centrifugal pump and therefore has a substantially constant load. In motors used for vehicle propulsion, the load varies enormously. For example, in the machine mentioned on page 5 of the specification of this application, a current density of 75 amperes is employed when running on the level, and this current may rise from 200 to 250 amperes when climbing or on bad roads.

Claim 1 has been amended to point out more definitely that the rules of ordinary design referred to as a standard of comparison are the rules of design for vehicle motors.

Claim 2 is believed to be patentable in its present form for reasons heretofore set forth, and it is not seen that the Examiner is relying on any new ground of rejection in his letter of March 2, 1915.

New claim 3 submitted herewith includes the features of claim 1 and certain additional features, namely, the low voltage of the battery, the long commutator, and the large current capacity of the field coils.

The Examiner's real ground of rejection is apparently lack of invention, and on this point it is believed that the decision of the Circuit Court of Appeals, Seventh Circuit, in Pieper et al. vs. S.S. White Dental Mfg. Co., 228 F. R., 30, is of interest. In this decision the validity of the Pieper motor patent No. 704,099 is upheld, and in the combination claimed, the relation between certain electrical features of the windings, namely, the self induction of the armature coils and the self induction of the field windings, are of great importance, just as in the invention now under consideration the electrical features of the commutator and brush contact area, low internal resistance of motor in both field and armature windings, etc., are of importance. In this decision reference is made to Railroad Supply Co. vs. Hart Steel Co., 222 F. R., 261, and the following quotation from this decision is believed to be pertinent to the invention under consideration:-

"Invention of a combination does not lie in gathering up the elements that are employed, but consists in first conceiving that a new and desirable result may be attained by bringing about a relationship of elements which no one has before perceived and then going forth to find the things that may be utilized in the new required relationship. In an old and well-developed field the apparent simplicity of a new device is often the highest evidence of inventive genius. So far as human minds are able, judges should exclude from view the disclosure of the patentee, should regard the patentee's problem as of a time antedating the application, and should therefore not too readily accept the ex post facto wisdom of the bystander. Prior art structures are to be examined in view of the purposes and laws of such structures. It is not enough that a prior art device approaches very near the idea of the patent in suit; it must so clearly disclose the idea that it would be apparent to a mechanic of ordinary intelligence who was not examining the device for the purpose of discovering in it the idea of the patent."

Certain advantages of applicant's invention have
been set forth in the specification and prior arguments.

Reconsideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Sizer

His Attorney

Orange, New Jersey

February 18th, 1916

HL-JS

Div. 26 Room 105

JSH

2-200

CJD

Paper No. 10

Altogether
"The Commissioner of Patents,
Washington, D. C.,"
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date of filing, title of invention, and
name of the applicant.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

Mar. 9, 1916

Frank L. Dyer,

Orange,

New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

T. A. Edison, filed Aug. 3, 1911, for Storage Battery Motor Sets.

Ser. No. 642,072.

Thomas Ewing
Commissioner of Patents.

4 6-2011

In response to amendment filed Feb. 10, 1916.

Upon reconsideration, the claims are again rejected for the reasons of record.

The applicant has taken a well known type of battery, expressly designed for use where sudden heavy overloads are frequent, and particularly for driving motors on vehicles, and has exercised only the skill to be expected of the designer in building the motor to work with the battery. Large brush contact area and low internal resistance are, as shown by the publications of record, used for low voltage machines, and if the applicant has carries his design to an extreme in these respects, it differs only in degree, not in kind. Further, it is again noted that the description nowhere states what "ordinary practice" is, and it is therefore difficult to determine with certainty what will or will not fall within the scope of the invention.

Inasmuch as claim 1, as amended, and claim 3 are directed to substantially the same subject matter as were the claims at the time of the last Office action, and bring up no new questions, nor necessitate the citation of new references, but are rejected on the same ground, this action is made final for the purpose of appeal.

Applicant's attention is directed to Commissioner's Order

Ser. No. 642,072....2.

No. 2210, 216 O. G. 1, in accordance with which no amendment that does not place this case in condition for final action may be entered herein without the approval of a Law Examiner.

Examiner - Division 26.

Received from T. A. Edison, May 22, 1911

Auto Motor

21

HE

APR
May 22 - 1911

The object of this invention is to reduce the initial cost of electric delivery wagons to bring them within the means of small dealers who deliver articles from their stores to their customers

The invention consists in a departure from the ordinary design of wagons to adapt them to specially designed high discharge rate batteries and to enable a fewer number of cells being used, especially where the roads are very hilly & require an abnormal power at times. The ^{supra} ~~superior~~ effect is the battery being ^{more} expensive than

2

than the motor it is very desirable to diminish the amount of battery to a minimum & this is brought about by adding to the cost of the motor in such a way that this added cost will be but a fraction of the cost of a battery were a motor used which is designed in the ordinary way

The motor armature & commutator have an abnormal design as related to each other instead of the length of the commutator being less than the length of the armature it is made twice as long as the armature

or nearly so depending upon the weight of the vehicle —

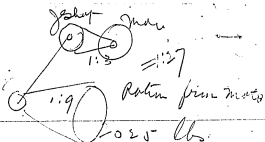
The ~~number~~ ^{area} of brush for taking off the current is two more times greater than in the ordinary design so that the loss in voltage when ascending steep grades is not greater than the loss of voltage on a level with the ordinary design —

Again the amount of Copper used to energize the field is made double or nearly so to that with motors ordinarily designed, — to the end that on steep grade the loss of voltage shall be reduced to a minimum. By this means in a twenty volt motor suitable

for a 1500 lb delivery wagon the extra expense of a lengthened Commutator & extra Copper on the field is met by a saving of 2 or 3 cells of storage battery costing three times as much.

At the same time the heat of the motor is enormously diminished, sparking is eliminated and the whole combination of battery & motor is of the most effective & reliable character.

~~might show the wagon also motor~~
 Mr Dyer will write the claims on this



10h 24v
2v v. motor

16 cells 2-8

9v battery

60 amp - 9 MPH

220 Max.

36 miles on charge

Ordinary Copper or metal
with this type it is possible to
control.

Ref. of wire used in armature #19

16 A4 Ammeter -

Mr. Blaw

May 18, 1911.

RECORD OF HILL CLIMB TEST IN NO. 1 DELIVERY WAGON EQUI.
WITH 16 A-B EDISON CELLS.

Course used for test was Eagle Rock hill, measuring 1 mile.
One half hour rests allowed after each test.

	Total Weight	Average Volts	Average Amps.	Time for Climb	Temperature Rise of Comm.		
1st climb, 2310 lbs.		17.09	155	15.5 min.	32.5 degrees centigrade		
2nd "	"	"	16.78	152.5	16.5 "	35.5 "	"
3d "	"	"	16.13	153.23	17. "	42. "	"
4th "	"	"	15.72	151.17	17.5 "	40.5 "	"
5th "	"	"	15.25	153.33	18. "	39.5 "	"
6th "	"	"	14.73	151.5	19.5 "	50. $\frac{1}{2}$ "	"
7th "	"	"	12.92	156.34	25.5 "	65 "	"
8th	Went up .1 of a mile and stalled, could run along on level slowly.						

The commutation was perfect throughout the above test.
Roads fair. Batteries fully charged at first.

June 23, 1911

The present practice in the manufacture of electrical trucks and automobiles is to use a relatively large number of cells and high voltage. For instance, the commercial voltages now used range from 40 to 60 in the small electric runabouts to as high as 110 or 115 volts, in the large motor-driven trucks.

The use of such voltages requires a comparatively large number of battery cells, and makes the outfit relatively expensive to construct and maintain.

Such an equipment is also much more liable to troubles from grounds or leakage in the wiring, batteries, or motors, than would be the case if a considerably lower voltage was available or practicable.

We have found that by certain modifications in the motor construction and arrangement of cells that a much lower voltage can be used efficiently for the above purpose, thus securing a relatively inexpensive equipment and all the advantages of a low voltage at the battery and motor.

In order to maintain the same horse-power output in an equipment of any given size, it is, of course, necessary that the current input to the motor be increased in proportion as the voltage decreases. For example in an automobile requiring one kilo watt at 100 volts, the current would only be 10 amperes. If the voltage were reduced to 10 volts the current input would be increased to 100 amperes. Hence the necessity of certain special features in the design of the motor to satisfactorily take care of a relatively large amount of current.

Using 20 volts as a standard we have found that the following proportions in motor construction give the most satisfactory result in practice. Reference is to be had to the figures 1 and 2 herewith, in which fig. 1 shows a side elevation and section of a motor proportioned as stated. A is the frame of the motor which supports the laminated field structure B. This field is of the four pole type and each pole is wound with heavy copper strip. The armature C is of the ironclad type with the winding imbedded in slots beneath the surface of the core. The winding itself is so arranged that not more than one turn per coil of wire is used. The working face of the commutator is at least twice the length of the face of the armature. A relatively large number of carbon brushes are used to commute the current with the least possible loss or drop in voltage. As there is only one turn per coil in the armature the voltage between the

segments of the commutator is reduced to a very small amount in a 20 volt winding, therefore, there is no tendency whatever to spark or flash under heavy loads.

Actual service conditions show that an electric vehicle having a normal load current of say 75 amperes on the level, running at a given speed may require 200 to 250 amperes when climbing steep grades or on bad roads. Under these conditions the usual design of motor with a relatively small commutator and light winding in the armature and field will invariably break down or burn out. A motor constructed as specified herewith will stand these extreme conditions of overload without any difficulty whatever.

Owing to the low voltage used a motor may be exposed to water and extreme weather conditions without any damage whatever. And such a motor is well adapted for continuous use in unskilled hands.

The number of connections between the cells requiring attention is greatly reduced. For instance the 40 cell equipment which is frequently used at the present time has over 120 separate connections at the battery, while a 16 cell equipment delivering 20 volts as outlined above has only 32 connections to look after.

Owing to the low voltage used in this system it is not necessary that the motor be made completely waterproof; it may be left relatively open so that active and free ventilation on all parts of the winding and the commutator is assured. This is a valuable feature when the motor is subjected to heavy and continuous overload, for in such a case the completely enclosed motor would be liable to damage from overheating while the open motor would be uninjured.

Bliss

July 31, 1911:

Mr. Dyer:-

I hand you herewith a specification intended to cover Mr. Edison's invention of a low cost storage battery and motor outfit for vehicles. I have carefully considered your suggestion to prepare diagrams comparing the design and characteristics of this motor with those of motors of standard design, but have not been able to evolve any such diagrams of a satisfactory kind. I am sure you fully realize the difficulty of drawing claims to cover an invention of this character.

HL-JS

Leahman

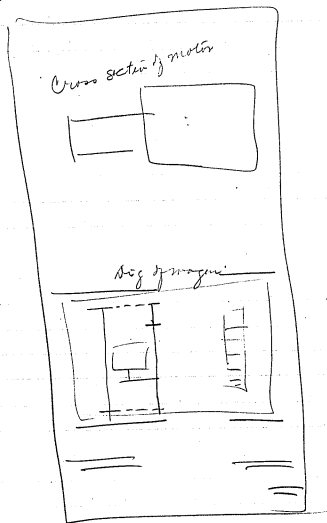
As you know, Mr. Edison leaves
Wednesday morning, so that his signatures
to this application should be secured
today or tomorrow.

L

General Electric 20 volt motor	
Resistance through Brushes	<u>.048</u>
" " Armature	.028
" " Field	<u>.030</u>
Total internal resistance	<u>.106</u>

C19117

Ch. motor



Mr. Dyer:

This is the way I intend
making drawing. Lewis

Test for Elec Loss on #2 Wagon Motor ^{1.0 volt} 100% _{100% motor}

Part	Watts lost	I ² R	Load 150 amps
Armature	1.95	292.	"
Field	1	140.	"
Wires to Brushes	.89	133.	"
		565	
		82 1/2 %	

C. 1913? 1

Mr. Edison,

I am finding great difficulty in drawing allowable claims in this application. The Patent to Parsons shows a generator which may be series wound and in which the commutator is several times as long as the armature. (See fig 5.) Parsons apparently fully realizes the necessity for low internal resistance where large currents are carried. Parsons shows a high speed machine, but the A. E. Bulletin shows a low speed generator having an abnormally long commutator. It is of course old to use a series motor with an Edison

battery, and we shall have to convince the Patent Office that something more has been done than merely suitably designing a motor for operation on large currents.

In our midst we shall have to elect between Eds for a motor per se, and Eds on the combination of a motor and a battery. Which shall we choose?

In the example given in our specification the internal resistance of the motor is .026 ohms.

How much greater internal resistance can be employed and still be within your invention.

Sanborn

Rec'd from Mr. Edison Jan 3, 1914
JLE

Plating Dynamos of of
low Voltage 3 to 6 Volts
giving 1500 to 4000 amp
~~have been~~ with armature
speeds of 1000 to 1500 Rps
have been constructed
with Commutators twice
the length of the ~~arm~~
anode armature core.

High speed low resistance
dynamos, similar to
plating dynamos

2

with Commutators
sometimes $2\frac{1}{2}$ times
as long as the anode
length of the armature
driven by Turbines at
abnormal speeds of
from 10⁰⁰⁰ to 30000 revolutions
per minute & carrying
very large currents have
been made -

In this invention the
length of the commutator
is twice the length of the
anode armature,
but the ~~the voltage and~~
~~ampere output~~ by
speed + voltage are
normal - The amperes
carried by the abnormally

3

long armature is -
but a fraction of those
carried by the plating
dynamos ~~as~~ at the
high speed turbine dynamos.

In fact the commutator
is far in excess of that
necessary to carry
the current generated &
universally adapted -

The gain obtained by using
such an abnormal length
of armature relatively to
the voltage & current is
to reduce the resistance
at the ~~commutator~~ commutator
to the smallest possible
~~degree~~ amount & at

4

the same time diminish
the pressure of each carbon
brush to less than that
nominally used so the
resistance ~~between~~
of the bridge of carbon
across the commutator
bars shall be very high -
so as to reduce armature
waste by short circuiting
coils, & also to reduce
the sparking that takes
place on heavy loads
to the least possible
amount & render
unnecessary the use
of commutating poles
& other devices to save
the commutator from cutting
a wearing -

Mr. Sanahau

Abandon
January 20th 1917

Mr. Edison:-

FOLIO 772 - Storage Battery Motor Sets

This application relates to the use with a battery of the Edison type of a series electric motor of low internal resistance having a long commutator and large brush and commutator contact area. The claims read as follows:-

1. In apparatus for the propulsion of an electric vehicle, the combination of a driven member required to transmit torque varying through wide limits, a series electric motor operatively connected to said member for driving the same, and a storage battery for supplying current to the motor capable of discharging at a rate in excess of normal, necessary and sufficient to operate the motor to cause the driven member to transmit the maximum torque required, said motor having low internal resistance in both field and armature windings and having brush and commutator contact area at least twice as great as required by the rules of ordinary design for vehicle motors, substantially as described.

2. In apparatus of the class described, the combination of a driven member required to transmit torque varying through wide limits, a series electric motor operatively connected to said member for driving the same, and a storage battery for supplying current to the motor capable of discharging at a rate in excess of normal, necessary and sufficient to operate the motor to cause the driven member to transmit the maximum torque required, said motor having low internal resistance and having brush and commutator contact area sufficiently great to substantially eliminate sparking even when the motor is supplied with current at the aforesaid excessive rate, substantially as described.

3. In a storage battery motor set for the propulsion of an electric vehicle, the combination of a driven member adapted to transmit torque varying through wide limits, a series electric motor of low internal resistance operatively connected to said member for driving the same, and a low voltage storage battery for supplying current to the motor capable of discharging at a rate in excess of normal, necessary and sufficient to operate the motor to cause the driven member to transmit the maximum torque required, said motor having its commutator length equal to or greater than its armature length and having its field coils of at least twice the current carrying capacity and its brush and commutator contact area at least twice as great as is required by the rules of ordinary design for vehicle motors, substantially as described.

These claims have been finally rejected, the position of the Examiner being stated as follows:-

"The applicant has taken a well known type of battery, expressly designed for use where sudden heavy overloads are frequent, and particularly for driving motors on vehicles, and has exercised only the skill to be expected of the designer in building the motor to work with the battery. Large brush contact area and low internal resistance are, as shown by the publications of record, used for low voltage machines, and if the applicant has carried his design to an extreme in these respects, it differs only in degree, not in kind. Further, it is again noted that the description nowhere states what "ordinary practice" is, and it is therefore difficult to determine with certainty what will or will not fall within the scope of the invention".

The prior art shows dynamo electric machines having low internal resistance, long commutators, and large brush contact areas with resulting low current densities at the brushes. We have presented the arguments for the allowance of the claims as strongly as possible, but have been unable to persuade the Examiner that there is anything patentable in the case. The question now is whether you wish an appeal taken to the Board of Examiners-in-Chief. I do not believe that such an appeal would be successful.

The claims as now presented cover the combination of a storage battery with a motor having certain characteristics. When the case was filed it contained claims for a motor. See original claims 4 and 5. These claims were divided out in compliance with an Office requirement. I do not believe there is patentable subject matter in the motor per se as disclosed in this application.

The only limitations we could put in claims in this application to cover the motor would relate to the abnormally extended area of brush contact with the commutator, length of the commutator the same or greater than the armature, or commutator twice as long as the armature, and abnormally low field resistance. The Examiner has already substantially held that these features are merely a question of design and not patentable. Please also let us have your decision as to whether you wish such a divisional application filed.

Henry Canham

HL-JS

If you decide to take an appeal, do you wish
Mr. Bull to argue the case?

HC

Mr. Holden:-

What do you think
of Mr. Eds in this case?
re F 772?

1-1-17

OK JA

HA

ask for
a
appeal

Patent Series
Patent Application Files

Folio # 773 Sound Records and Process and Apparatus for Making
Same
Serial #: 642377
Primary Applicant: Edison, Thomas A
Date Executed: 8/1/1911

Folio No. 773Serial No. 642,377

Applicant.

Address.

Thomas A. EdisonTitle Sound Records and Process and apparatus for making sameFiled August 4th 1911

Examiner's Room No. _____

Assignee _____

Ass'g't Exec. _____

Recorded _____

Liber _____

Page _____

Patent No. _____

Issued _____

ACTIONS.

- | | | |
|----|------------------------------|----|
| 1 | Office Letter Sept. 21, 1911 | 16 |
| 2 | Invended Aug. 10, 1912 | 17 |
| 3 | Rejected Sept. 27-1912 | 18 |
| 4 | | 19 |
| 5 | | 20 |
| 6 | | 21 |
| 7 | | 22 |
| 8 | | 23 |
| 9 | | 24 |
| 10 | | 25 |
| 11 | | 26 |
| 12 | | 27 |
| 13 | | 28 |
| 14 | | 29 |
| 15 | | 30 |

THOMAS A. EDISON

Abandoned
TAC

FRANK L. DYER,

Counsel,

Orange, New Jersey.

Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON
a citizen of the United States, residing and having a Post Office address at
Llewellyn Park, West Orange, Essex County, New Jersey

prays that letters patent may be granted to him for the improvements in

SOUND RECORDS AND PROCESS AND APPARATUS FOR MAKING SAME

set forth in the annexed specification; and he hereby appoints Frank T. Dyer (Registration No. 560), of Orange, New Jersey, his attorney, with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent Office connected therewith.

Thomas A. Edison

S P E C I F I C A T I O N

TO ALL WHOM IT MAY CONCERN:-

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, Essex County, New Jersey, have invented certain new and useful improvements in SOUND RECORDS AND PROCESS AND APPARATUS FOR MAKING SAME, of which the following is a description:-

My invention relates to an improved sound record, preferably of that type which consists of a base or backing of one material, usually a molded material, and an outer surface veneer or covering of another material, which receives the sound record, and also to an improved process and apparatus for making the record. The principal object of my invention is to produce in a quick and efficient manner an improved sound record which will be strong and durable and have no air bubbles or other imperfections in the record surface, and which will permit a large number of reproductions without sensible wear. In accordance with this object, I apply the outer surface veneer in a plurality of exceedingly thin layers to the base or backing, thereby obtaining a record surface of a high degree of homogeneity and perfection. Other objects of my invention will appear more fully in the following specification and appended claims.

I prefer to employ for the outer sound record surface or veneer a hard solid material, preferably a

resinous body like shellac, which is solid at ordinary temperatures. As a suitable material for the base or backing of my improved record, I prefer to use Montan wax impregnated with about 7% of cotton flock or other fibrous material. By the use of this fibrous material with the Montan wax, I secure a high degree of durability for the base, the fibrous material being completely penetrated and enclosed by the wax-like material, and at the same time controlling in a degree the expansion and contraction of the base. If desired, inert powders may be mixed with the Montan wax and flock to further control the expansion and contraction. A record made of the specific compositions mentioned above has substantially the same coefficient of expansion for the backing and the surface veneer, so that there is no danger of the record becoming cracked under changes of temperature. Such a record is also very durable and may be subjected to comparatively rough treatment without any objectionable injury. While, however, I prefer to use the specific compositions mentioned, my invention is not limited thereto, and various other materials or compositions may be used.

In making a record having a surface veneer or covering of shellac, the shellac is dissolved in alcohol or any other suitable solvent, and the solution obtained is applied in a plurality of exceedingly thin layers to the base or backing. I then preferably mount the backing upon a rotating mandrel or other suitable support and apply the solution thereto by means of a brush of camel's hair, or in any other suitable way. It is understood,

of course, that each layer is permitted to dry before the next layer is superposed thereon. After a sufficient number of layers of the shellac solution have been coated on the blank, the latter is placed in a room or oven heated to a suitable temperature for expelling the excess of solvent to permit the record to harden upon cooling. I have found that if five or six layers of ^{a suitable} ~~KMA~~ shellac solution are coated upon the backing, that the record tablet may be hardened by placing the same in a room heated to about 120° F. for about four hours. The tablet with the hardened surface veneer is provided with the record impression in the manner hereinafter described or by any other suitable process. By applying the surface coating in a number of thin layers as described above, the coating or veneer not only has a more even texture, but may also be dried and hardened upon the backing in but a small fraction of the time it would take to dry and harden the same if it all were applied as one layer, the formation of air bubbles which is unavoidable when the surface is applied as a single layer also being prevented.

In order that my invention may be more clearly understood, attention is hereby directed to the accompanying drawings, forming part of this specification, and illustrating certain preferred forms of apparatus for making my improved record.

In the drawings, Figure 1 represents a plan view of a support for the record tablets or backings;

Figure 2 represents a side elevation, partly in section, taken on the line 2-2 of Figure 1;

Figure 3 represents a front elevation of a modified form of supporting means for the tablet or backing; and

Figure 4 is a central vertical sectional view of a suitable device for forming the record impression in the surface covering or veneer, some of the parts being shown in elevation.

In all the views, like parts are designated by the same reference characters.

Referring to the drawings, the numeral 1 represents a suitable frame or support provided with a plurality of recesses 2 open at one end and adapted to receive and hold in proper position a plurality of racks 3, each provided with a vertical lateral flange 4 in which a plurality of record supports 5 are rotatably mounted. Secured to each of these supports 5 is a pulley 6 adapted to be rotated by a cord or belt 7 which is engaged over the pulleys 8 and 9 rotatably mounted in opposite ends of the flange 4, the pulley 9 being preferably mounted in a vertical ear or projection 4' on said flange as shown. In order to provide a large arc of contact between the cord or belt 7 and the pulley 6, and thereby insure the efficient driving of the latter, idle pulleys 10 are provided. These pulleys engage the cord or belt 7 on opposite sides of the pulleys 6, the pulley 8 taking the place of one of the end idlers. The pulley 9 is rigidly connected with and rotated by a gear wheel or other suitable driving means 11 adapted to detachably engage a pinion 12 secured to the shaft 13, which is rotatably mounted in the standards 14 on the base 1, and is driven in any suitable way. Referring to Figure 1, it will be seen that a gear 12 is provided on the shaft 13 for each of the racks 3. It will also be seen that the driving means 11 and 12 are auto-

matically connected and disconnected when the racks 3 are slid or otherwise inserted in place in the recesses or grooves 2 and removed therefrom.

In using the record support described above, a base or backing is mounted upon each support 5, and the desired number of racks 3 placed in position in the recesses 2 of the base 1, the gears 11 of the various racks being automatically engaged with the pinions 12 by this operation, so that all of the backings are placed in rotation by the rotation of shaft 13. A brush, such as that shown at 15, is then dipped into a solution of the material of the surface covering or veneer, and this solution is applied to the various backings, beginning with the first backing on one rack, finishing this rack, then coating the backings on the next, and the various following racks in order until a suitable number of backings have been coated. The number of racks may be so chosen that the tablets first coated will be dry and ready for another coating as soon as each coating has been applied to all of the tablets. A sufficient number of layers or coatings are applied in this way until the veneer has the desired thickness. The thickness of the solution applied may obviously be regulated at will, but it is preferable to have the same rather thin so as to obviate the production of imperfections in the surface coating.

After the surface veneer or coating has been applied, the racks 3 are detached from the base 1 and placed into a suitably heated room or oven, where the excess amount

of solvent for the surface material is driven off, as hereinbefore described, so as to place the record in condition for hardening upon cooling to normal temperatures.

The blanks formed as described above may be provided with the record impression in any suitable way, Figure 4 illustrating a convenient form of apparatus for performing this operation. In this figure, 16 represents a suitable mold having the matrix 17 formed on the inner surface thereof. A core 18 provided with a central passage 19 and a transverse passage 20 extending across the core and communicating with the passage 19, has a jacket or envelope 21 of rubber or other elastic material placed upon the same, this envelope being secured to the core by means of the intumed ends thereof. The outer end of the mold is closed by a member 22, which may be secured in position against the upper end of the jacket by means of a taper key 23, which may be forced in position in a slot in the neck 24 of the core 18, so as to force the core and the member 22 into locking engagement. A jacket 25 or other suitable means is placed around the matrix, so as to heat or cool the same as desired.

In forming the record impression in the blank, formed as described above, the blank, preferably in a somewhat plastic condition, is placed on the outside of the rubber envelope 21, and the mold 16 placed in position on the outside of the blank. The upper end of the mold is then closed by the member 22, which is locked in position by the key 23, and fluid under pressure is admitted to the interior of the rubber jacket 21 through the openings 19

and 20. After the application of sufficient pressure, the latter is shut off, and the finished record removed from the apparatus. In order to shrink the record from the matrix, a suitable cooling fluid may be passed through the jacket 25.

In Figure 3 I have illustrated a tablet support adapted to be used in a modified process. This support comprises a single mandrel 27 secured to a shaft 28 rotatably mounted in a bearing or support 29, and having secured at its end opposite that supporting the mandrel a pulley 30 adapted to be driven from any suitable driving means. An ejector comprising a bell crank lever 31 pivoted to the support 29, a slide 32 pivoted at one end to the upper arm of the lever 31 and provided with a slot 33 whereby it is slidably mounted on the guide or button 34, is provided to conveniently loosen the tablets from the mandrel 27. The slide 32 has an up-turned flange 35 at the end adjacent the tablet, this flange being adapted to engage the adjacent end of the tablet and shift the latter longitudinally of the mandrel 27 when the outer end of the horizontal arm of the lever 31 is depressed. A tension spring 36 secured at one end to the support 29 and at the other end to the slide 32 is provided to retract the slide 32, and to place the ejector in inoperative position when the ejecting force is removed from the outer end of the horizontal arm of the lever 31.

In employing the device disclosed in Figure 3, the backings or bases for the records are supported upon

racks in a suitable number of trays and applied consecutively to the mandrel or support 27, a fine coating being applied to each tablet while the same is supported on the mandrel 27, preferably by a brush 15" extending the width of the tablet, as shown in Figure 3. This brush should be given a slight lateral back and forth movement to prevent the layer of surface material applied from becoming streaky. The trays may be supported upon a carriage mounted upon tracks, so that they may be conveniently moved along past the support on which the tablets are coated. After each of the backings has been coated, a second coating is applied, and the operation is repeated until the proper thickness of surface material is attained. After this, the trays supporting the record blanks may be placed in a heated room to drive off the excess of solvent in the surface material. The record impression may be formed in the surface veneer or coating in the manner hereinbefore described, or in any other suitable way.

It is to be understood that my invention is not limited to the exact details hereinbefore set forth, but is as broad as indicated by the terms of the appended claims.

Having now described my invention, what I claim as new and desire to protect by Letters Patent of the United States is as follows:-

Cancelled Paper

1. A sound record composed of a base and a surface veneer of record material applied in a plurality of thin superposed layers, substantially as described.
2. A sound record composed of a base and a surface veneer of a hard resin applied in a plurality of thin superposed layers, substantially as described.
3. A sound record composed of a base and a surface veneer of shellac applied in a plurality of thin superposed layers, substantially as described.
4. A sound record composed of a base and a surface veneer of a hard resin applied in a plurality of thin superposed layers, said base being composed of a material having substantially the same coefficient of expansion as the material of the said surface veneer, substantially as described.
5. A sound record composed of a hard wax-like base and a surface veneer of a hard resin applied in a plurality of thin superposed layers, substantially as described.
6. A sound record composed of a hard wax-like base impregnated with fibrous material, and a surface veneer of a hard resin applied in a plurality of thin superposed layers, substantially as described.
7. A sound record composed of a hard wax-like base impregnated with fibrous material, and a surface veneer of a hard resin applied in a plurality of thin superposed layers, the material of which said base is composed having

Cancelled 4/2/34
substantially the same coefficient of expansion as the material of said surface veneer, substantially as described.

8. A sound record composed of a hard wax-like base impregnated with fibrous material, and a surface veneer of shellac applied in a plurality of thin superposed layers, the material of which said base is composed having substantially the same coefficient of expansion as the material of said surface veneer, substantially as described.

9. The method of making record tablets which consists in coating a base or backing with a plurality of thin superposed layers of record material, substantially as set forth.

10. The method of making record tablets which consists in forming a base or backing, and coating the same with a plurality of thin superposed layers of a hard resin, substantially as set forth.

11. The method of making record tablets, which consists in forming a base or backing of hard wax-like material, and coating the said base or backing with a plurality of thin superposed layers of a hard resin, substantially as set forth.

12. The method of making record tablets, which consists in forming a base or backing of hard wax-like material impregnated with fibrous material, and coating the said base or backing with a plurality of thin superposed layers of a hard resin, substantially as set forth.

Cancelled Note
13. The method of making record tablets, which consists in coating a base or backing with a plurality of thin superposed layers of a record material, causing the coating to dry and harden, and finally forming the record impression in said coating, substantially as set forth.

14. The method of making record tablets, which consists in applying to a base or backing a plurality of thin coatings of a solution of record material, and expelling the solvent to cause the coated base or backing to harden, substantially as set forth.

15. The method of making record tablets, which consists in applying to a base or backing a plurality of thin coatings of a solution of record material, allowing each coating to dry before the application of the next, causing the coated base or backing to harden, and finally forming the record impression in the surface coating, substantially as set forth.

16. In a device of the class described, the combination of a plurality of rotatable tablet supports, a plurality of independently portable bearings therefor, rotatable driving means, and means whereby the rotation of said driving means may be imparted to said tablet supports, substantially as described.

17. In a device of the class described, the combination of a base, rotatable driving means thereon, a plurality of independently portable frames adapted to be support-

ed on said base, and provided with rotatable tablet supports, and means whereby the rotation of said driving means may be imparted to said tablet supports, substantially as described.

10.³ In a device of the class described, the combination of a base, rotatable driving means thereon, a plurality of independently portable frames adapted to be supported on said base, and provided with rotatable tablet supports, and means whereby the rotation of said driving means may be imparted to said tablet supports, said base being provided with means whereby said frames may be positioned so as to operatively connect said last named means to said driving means, substantially as described.

29.⁴ In a device of the class described, the combination with a base, rotatable driving means thereon, a plurality of independently portable frames adapted to be supported on said base, and each provided with a plurality of record supports, means supported by said frames and engageable with or disengageable from said driving means by direct bodily movement of said frames, whereby the rotation of said driving means may be imparted to said record supports, substantially as described.

29.⁵ In a device of the class described, the combination with a base, rotatable driving means thereon, a plurality of independently portable frames adapted to be supported on said base, and each provided with a plurality of record supports, means supported by said frames and engageable with or disengageable from said driving means by direct bodily movement of said frames, whereby the rotation of said driving means may be imparted to said record supports, said base being provided with means whereby said

frames may be positioned in operative position relatively to said driving means, substantially as described.

Invent A - Claims 6-8 include 7/10/12

This specification signed and witnessed this 1st day of August 1908

Thomas A Edison

Witnesses:

1. Friedrich Bachmann

2. Anna P. Reichen

Oath.

State of New Jersey }
County of Essex } ss.,

THOMAS A. EDISON, the above named
petitioner, being duly sworn, deposes and says that he is a citizen of the United
States, and a resident of Llewellyn Park, West Orange, Essex County,
New Jersey

that he verily believes himself to be the original, first and sole inventor of the
improvements in

SOUND RECORDS AND PROCESS AND APPARATUS FOR MAKING SAME

described and claimed in the annexed specification; that he does not know and
does not believe that the same was ever known or used before his invention or
discovery thereof; or patented or described in any printed publication in the
United States of America or any foreign country before his invention or
discovery thereof, or more than two years prior to this application; or patented
in any country foreign to the United States on an application filed more than
twelve months prior to this application; or in public use or on sale in the
United States for more than two years prior to this application; and that no
application for patent upon said invention has been filed by him or his legal
representatives or assigns in any foreign country.

Thomas A Edison

Sworn to and subscribed before me this 1st day of August 1908

NOTARY PUBLIC

Notary Public.

[Seal]

S. Acosta 981
16

642377
2-1

173

254
8

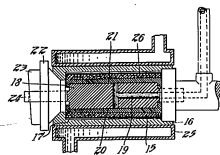


Fig. 4

the
operation
of the
form
is 1738

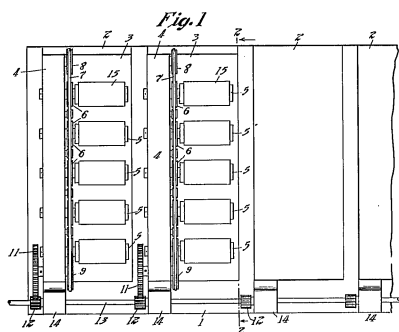
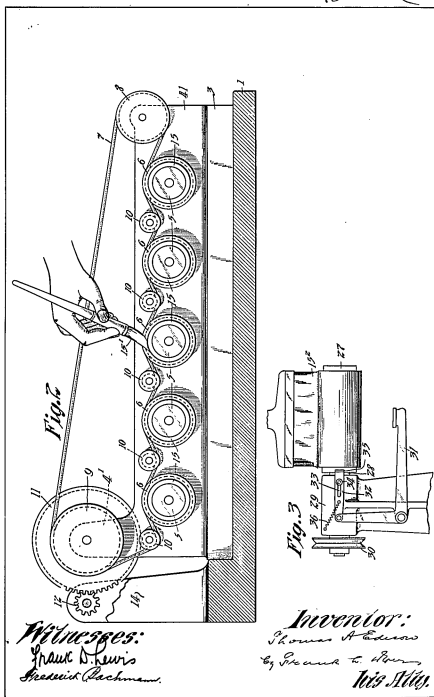


Fig. 1

Witnesses:
Frank Brown
Frederick Bachmann

Inventor:
Thomas A. Edison
By Frank L. Brown
his Atty.



773
Div. ~~2~~ Room ~~375~~

Adm. only
"The Commissioner of Patents,
Washington, D. C."
J. H. D. 101

2-260

Paper No. 2, 1st.

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

Sept. 21, 1911.

Thomas A. Edison,
Care Frank L. Dyer, "
Orange, New Jersey.

Please find below a communication from the EXAMINER in charge of your application.

for Sound Records and Process and Apparatus for Making Same,
filed Aug. 4, 1911, serial number 642,377.

E. B. Smith

Commissioner of Patents.

Claims 1 to 8 inclusive are drawn to a sound record.

Claims 9 to 16 inclusive are drawn to the method of making
the record tablet.

Claims 16 to 29 inclusive are drawn to a molding apparatus.
Division is required between these several groups according to
the provisions of rule 42 and the title of this invention
should be correspondingly limited to conform with the scope of
the claims.

~~In making~~ In amending this case, applicant
should consult the following references:

Petit, Dec. 24, 1901, #680,408;
Sanderson, Jan. 25, 1910, #907,777;
Reynard, Jan. 29, 1901, #666,819;
Capps, Jan. 22, 1901, #666,493, all in (181-16);
Miller, et al., May 23, 1905, #790,516;
Ames, et al., May 26, 1908, #838,332, both in (181-14);
Lambert, Dec. 18, 1900, #664,225, (181-17).

IN THE UNITED STATES PATENT OFFICE

SOUND RECORDS AND PROCESS AND
APPARATUS FOR MAKING SAME

Room No. 379.

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of September 21, 1911, please amend the above entitled application as follows:-

Cancel claims 1 to 15 inclusive, and renumber claims 16 to 20 inclusive as 1 to 5.

Add the following claims:-

6. In a device of the class described, the combination of a base, rotatable driving means thereon, a portable frame adapted to be supported on said base and provided with a rotatable record support, ^{and} means supported by said frame engageable with or disengageable from said driving means by bodily movement of said frame, whereby the rotation of said driving means may be imparted to said record support, substantially as described.

7. In a device of the class described, the combination of a base, rotatable driving means thereon, a portable frame adapted to be supported on said base and provided with a rotatable record support, and means supported

by said frame engageable with or disengageable from said driving means by bodily movement of said frame, whereby the rotation of said driving means may be imparted to said record support, said base being provided with means whereby said frame may be positioned in operative position relatively to said driving means, substantially as described.

a

8. In a device of the class described, the combination with a base, rotatable driving means thereon, a plurality of independently portable frames adapted to be supported on said base and carrying rotatable record supports, means supported by said frames and engageable with or disengageable from said driving means by direct bodily movement of said frames, whereby the rotation of said driving means may be imparted to said record supports, substantially as described.

R E M A R K S

The requirement for division made by the Examiner has been complied with and action on the merits of the claims now in the case is respectfully requested. The right is reserved to file a divisional application on the subject matter of the canceled claims.

The new claims added herewith are drawn to the same invention as the original claims retained.

Respectfully submitted,

THOMAS A. EDISON

By

Frank R. Dyer
his Attorney.

Orange, New Jersey
August 10th, 1912.

Div. 23, Room 379

Address only
"The Commissioner of Patents,
Washington, D. C."
J.H.D.-Sut.

2-300

Paper 4, Rej.

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

Sept. 27, 1912.

Thomas A. Edison,
Care Frank L. Dyer,
Orange, New Jersey.

U. S. PATENT OFFICE,
SEP 27 1912
MAILED.

Please find below a communication from the EXAMINER in charge of your application.

for Sound Records and Process and Apparatus for Making Same,
filed Aug. 4, 1911, serial number 642,377.

4-6-3531

E. B. Moore

Commissioner of Patents.

This action is responsive to the amendment filed Aug. 12,
1912.

The title of this application should be limited to conform
with the scope of the claims.

Claims 6 and 7 are rejected as specifying only the attach-
ment in Hays, Aug. 1, 1911, #999,646, (181-3), or Bawtree, June 2,
1908, #12,002, (181-3).

Claims 1, 2, 3 and 8 are rejected as specifying only a
plurality of such attachments as disclosed in Hays or Bawtree,
adapted to be applied to the machines disclosed in these references.

Claim 1 is also rejected upon Spurgeon, Jan. 1, 1907, #839,902,
(181-4). All of the claims are additionally rejected as specify-
ing no more than Gumber, Aug. 22, 1905, #798,034, or Romano, June 2,
1903, #729,798, both in (181-4) with interchangeable record wheels
or chains respectively.

Recd from Mr. Edison
July 18, 1911
HC

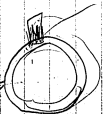
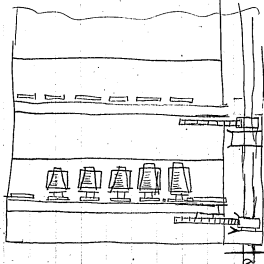
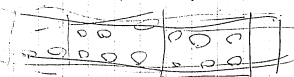
Recd from Lewis
July 29, 1911
J. R. Edwards

Recd from
July 18, 1911
HC

Recd from
120 tubes
HC



Recd from Lewis,
July 28, 1911.
E. Bachmann.



Patent Series
Patent Application Files

Folio # 777 Manufacture of Fertilizing Material

Serial #: 645838

Primary Applicant: Kiefer, Herman E

Date Filed: 8/24/1911

Folio No. 777

Serial No. 645,838

Applicant.

Address.

Herman E. Kiefer
111 North Fourth St.
Easton, Penn.

Cement

Title Manufacture of Fertilizing Material

Filed Aug. 24 1911

Examiner's Room No. _____

Assignee _____

Ass'g't Exec. _____

Recorded _____

Liber _____

Page _____

Patent No. _____

Issued _____

ACTIONS.

- | | |
|---|----|
| 1. <u>Rejected Oct. 2, 1911</u> | 16 |
| 2. <u>Amended Feb. 26 - 1912</u> | 17 |
| 3. <u>Rejected Oct. 30 - 1912</u> | 18 |
| 4. _____ | 19 |
| 5. _____ | 20 |
| 6. <u>Signed Paper from</u> | 21 |
| 7. <u>via letter sent to H. E. Kiefer</u> | 22 |
| 8. <u>Edison Portland Cement Co</u> | 23 |
| 9. <u>See letter to H. E. Kiefer</u> | 24 |
| 10. <u>dated March 31/1913</u> | 25 |
| 11. _____ | 26 |
| 12. _____ | 27 |
| 13. _____ | 28 |
| 14. _____ | 29 |
| 15. _____ | 30 |

VAULT

Abraham
769

Oct 21/1913
see letter to H. E. Kiefer
from Mr. Dyer
WC

FRANK L. DYER,
Counsel,
Orange, New Jersey.



The Edison Portland Cement Co.

THOMAS A. EDISON, CHAIRMAN OF BOARD
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J. LEONARD THOMPSON, VICE-PRESIDENT
H. F. MILLER, TREASURER
WILLIAM H. EDISON, SECRETARY AND GEN. MGR.

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BOSTON, MASS. - Post Office Square Bldg.
BALTIMORE, MD. - National Bank Building

Mr. Thos. A. Edison,
Edison Laboratory,
Orange, N. J.

Dear Sir:

Experiments on proposed Fertilizer

In accordance with your notes on the original

letter I have secured the following to date:

Orthoclase

Prof. Hart of Lafayette College is working on a separation of potash and alumina, and has about 200 lbs. of good orthoclase which he tells me is supposed to contain about 13% of potash. We have secured about 5 lbs. of it for our tests.

Phosphate Rock.

We have also secured 5 lbs. phosphate rock from Baltimore, which analyzes as follows:

Loss on ignition -	1.48	per cent
Phosphoric Acid (P_2O_5) -	37.58	" "
Lime -	48.13	" "

We have ground these so that it passes a 200 mesh sieve, and made mixtures as follows:

*Correspondent to June 1, 1911
Winter on Chem works
at Stewartville N.J.
your feedings are excellent
in plants mixed
it made fertilizer
He will do it think
he can melt 1500 lbs.
at a time
Not Oxford furnace
these are influence of
of orthoclase - Also need 100 lbs. of works.*

Mr. Edison,

#2

June 1 1911

Mixture #1

1 part of feldspar
1 " " phosphate

Mixture #2

1 part of feldspar
2 parts " phosphate

Mixture #3

2 parts of feldspar
1 part of phosphate

We have tried fusing all of these in a blast lamp, and find that it can be done. I enclose you under another cover, specimens of each, which you will note are fused only on the outside. Unfortunately we cannot get neat enough to fuse it in large quantities.

We have not made analyses of them, as we do not have the platinum ware necessary for alkali determinations. Moreover, we only have two men who could make such analyses, and all three of us are so busy on cement work, that I hesitate at this time (when shipments are heavy) to take the time myself, or to take them off their regular work. I do not like to take any chance on our regular work (even if we had the platinum) to investigate what may be a phantom.

Mr. Edison,

#3

June 1, 1911:

These samples show that it can be fused in a rotary kiln, and if done, these materials ought to show the following calculated analyses, provided the potash does not go up the stack.

Set apart.

	<i>Sell for 1 Phosphate #1</i>	<i>Sell for 2 Phosphate #2</i>	<i>Sell for 2 Phosphate #3</i>
Phosphoric Acid -	18.9%	25.4%	12.6%
Potash -	6.5%	4.4%	8.7%
Lime -	24.2%	32.4%	16.1%

If you are still interested in this, and would arrange to have Silver Lake Company fuse it in larger quantities, I could make them up mixtures of say a pound each, and after it is fused, find out the composition and the probable effect on the phosphoric acid and alkali. Part of the alkali in feldspar can be extracted by boiling water. I am under the impression that after this treatment it might all be extracted this way.

We are trying to get samples, analyses and prices in carload lots of phosphates in order to see if there is any possibility of making it a commercial proposition.

Have you any further suggestions?

You will note that the ingredients of highest commercial value - i.e. potash and phosphoric acid, vary

Mr. Edison,

#4

June 1, 1911:

as they must according to the proportions, but as these each sell at the rate of about 6¢ per lb. in fertilizers, the best mixture would be the one with the highest total provided it would have the same value in a double fertilizer. The commercial phosphate alone would have a fertilizer value of 37.5% X 2000 lbs. or 750 lbs. X 6¢ or \$45 per ton, but we know that commercial phosphate does not sell at that price, because it is not all "available" - whether rotary kiln would make it available is the question? The other question is that it is cheaper for the farmer to buy phosphate alone than to pay 6¢ for it in a mixture, but if our mixture of potash (from a cheap source as feldspar) makes them both available, then a cheap cost of production would put them on the same basis as present potash-phosphoric fertilizers, and it should command the same price which we are now paying. For instance Mixture #1

Phosphoric Acid	18.0% X 2000 lbs.	X 6¢ -	\$22.68
Potash	6.5% X " " X 6¢ -		<u>7.80</u>
			30.48 per ton

Mixture #2

Phosphoric Acid	25.4% X 2000 lbs.	X 6¢ -	30.48
Potash	4.4% X " " X 6¢ -		<u>5.28</u>
			35.76 per ton

23.11.11

Mr. Edison,

#5

June 1, 1911:

Mixture #3

Phosphoric Acid 12.6% X 2000 lbs. X 6¢ -	\$15.12
Potash 8.7% X " " X 6¢ -	<u>10.44</u>
	25.56 per ton

The question is will a partial fusion (clinkering) or even complete fusion of feldspar and calcium phosphate, set up new relations between Silica - Alumina - Potash - Lime and Phosphoric Acid, similar to the unstable nature of Portland Cement so that both potash and phosphoric acid will be in a shape acceptable to fertilizer chemists as "available"? If so, this looks like a good proposition.

The minor suggestion of fusing limestone and feldspar, so as to make potash available, might even be a good idea, but if you get lime and phosphoric acid in the same material for fluxing with the feldspar, it is all the better.

Very truly,

J. H. Kiefer
Chemist.

HEK/BSM



The Edison Portland Cement Co.

THOMAS A. EDISON, CHAIRMAN OF BOARD
W. B. BALLOUT, PRESIDENT
J. LARSON THOMPSON, VICE-PRESIDENT
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NEWARK, N. J., United Building
BOSTON, Mass., Post Office Building
BALTIMORE, Md., National Bank Building
JULY 20, 1911.

Mr. Thos. A. Edison,
Orange, N. J.

Dear Sir:-

*Riffles what you
go ahead & examine what you
want in this patent to our
legal dept & apply for it*

FERTILIZER PROPOSITION

Complying with your instructions I have had Mr. Dyers office look up all the patents on feldspar limestone and feldspar phosphate fertilizers. Out of a great number I have picked out the following worthy of note.

LIMESTONE & FELDSPAR

BLACKMORE PATENT #513001:

He uses a sealed furnace and also a chloride. Rotary kiln is not even suggested.

CUSHMAN PATENT #597818:

Uses feldspar limestone and a chloride but no mention made of rotary kiln.

PHOSPHATE AND FELDSPAR

BICKELL PATENT #16111:

No mention made of a rotary kiln. This is nearest to our idea.

#2.

Mr. Edison.

7-20-11.

PHOSPHATE AND LIMESTONE

STILLMAN PATENT #305249:

Does not powder the material or use
rotary kiln.

HODGKINS PATENT #423320:

Uses lime and phosphate but not rotary
kiln. In fact process is quite different.

LOWMAN PATENT #422130:

Uses fluorspar also and does not use
rotary kiln.

COATES PATENT #514696:

Uses carbonate of lime and phosphate of
lime but not rotary kiln.

None of these cover our idea of phosphate
and feldspar in rotary kiln. In fact none of them of
any kind use rotary kiln. If the Patent Office will
grant several patents for the same materials using
different methods of procedure I should think they would
allow our phosphate feldspar idea, when we specify
rotary kiln in connection with it. There is a greater
similarity between some of these patents than there is

#3.

Mr. Edison.

7-20-11.

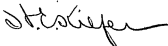
between any of them and our ideas.

Regardless of the patents I shall
prospect the mountains around here as time permits
and try to locate the feldspar you spoke of.

Have you any suggestion as to further
work with a view of application for a patent?

Very truly,

HEK-GES



P.S.

Since writing the above I attended the
Fertilizer Convention at Atlantic City, and heard several
good talks by experts on Phosphoric Acid and Potash. I
also had 2 hours private talk with Dr. Cameron of the
U. S. Bureau of Soils and learned a great deal. Shall
make a separate report on it. To summarize the whole
thing I think if we get the potash feldspar we will be
all right, patent or no patent, but I also believe a
patent would be granted on the process I have outlined.

July 22, 1911.

Mr. Thomas A. Edison,

Orange, N. J.

Dear Sir:-

I wrote you yesterday concerning my talk with Dr. Cameron, of the U. S. Bureau of Soils. He thoroughly confirmed my previous opinion that "soluble" and "insoluble", and "available" and "unavailable" in reference to phosphoric acid and potash are only relative terms and in either case it is all available in time. Of the dozens of methods of analyses, none of them will determine how readily "available" either constituent is as to time.

Custom has led to the belief that phosphoric acid in natural phosphates and potash in feldspar are in the so-called "unavailable" states. If we make any change whatever in their nature, chemists are up in the air as to how available either potash or phosphoric acid become.

For instance in Thomas slag, fertilizer chemists permit an analysis for total phosphorous and make no attempt to divide it into "available" and "unavailable". If we make a slag in a rotary kiln no doubt fertilizer chemists will take the same view as we shall have a similar compound and have a right to demand treatment similar to the Thomas slag.

No doubt they will grant it to avoid controversy.

So much for that. Cushman has covered rotary kiln process for lime, carbonate of lime and feldspar, but I see no reason why we can not patent rotary kiln process for phosphate of lime and feldspar.

There is far more money in the double fertilizer than the feldspar limestone alone, but if we can not protect it by patents the Southern cement mills would beat us out on freights on phosphate. Phosphate rock on a basis of 72% triphosphate of lime is ~~not~~ quoted at \$3.75 per ton f.o.b. cars Mt. Pleasant, Tenn., with a poor demand for it. Am getting freight rates to see where we stand.

I still think the process is patentable, and enclose you a rough copy of proposed patent specifications. You will note that it is quite different from any of the patents I sent you. Bickell patent is the nearest, but my idea is radically different from his. If you think well of it, have Mr. Dyer express an opinion whether an idea on the lines I have indicated is sufficiently different from the others to have a standing in the Patent Office. If we can get it patented, it will at least have an effect in causing Southern cement plants to hesitate before going into it.

Very truly,

D. S.

Since writing the above, I have
your note to go ahead, and am sending a copy
of this letter and specifications, etc., to
Mr. Over. The best way to settle it is to
have the Patent Office reject it if it is
not new.

M. I. K.



The Edison Portland Cement Co.

THOMAS A. EDISON, CHAIRMAN OF BOARD
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H. V. MILLARD, TREASURER
Wm. D. THOMAS, SGT. & ASST. MANAG.

Telegraph, Freight and Passenger Station, NEW VILLAGE, N. J.

P. O. ADDRESS STEWARTSVILLE, N. J.

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NEW YORK, N. Y.: St. James Building
NEWARK, N. J.: Union Building
BOSTON, MASS.: Post Office Square Bldg.
SAVANNAH, GA.: National Bank Building

July 22, 1911.

Henry Lanahan, Esq.,

Legal Dept., Edison Lab'ry.,

Orange, N. J.

Dear Sir:-

Copies of various alkali and phosphoric acid processes have been received and after going over them carefully, I see no reason why a patent should not be granted on the lines on which I spoke.

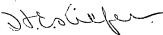
Have had it up with Mr. Edison and he instructed me to explain to you and apply for a patent on it. I enclose you copies of the various patents and a copy of a letter to him, showing why I think my idea is just as essentially different from any of the existing patents as any one of them is from another. It seems to me the simplest way is for me to draw up a rough draft of an application, as I think it should be drawn so as to avoid the claims in the other patents. This I have done, and enclose this draft which will no doubt have to be revised. I think it covers the essential points and shows you what I am driving at.

Please compare this with the patents which I return, and let me have your opinion as to whether it is

or is not in conflict with the other patents, also any suggestions you have. I can then re-write specifications and claims and again return to you for revision.

Please return all the patents and papers so I can give them further study after getting your suggestions?

Very truly,

A handwritten signature in dark ink, appearing to read "J. C. Kiefer", with a long horizontal flourish extending to the right.

HEK-RBS

August 5, 1911.

Dr. H. B. Kiefer.
c/o Edison Portland Cement Co.,
Stewartsville, N. J.

Dear Sir:-

I enclose herewith draft of specification covering your invention in the manufacture of fertilizing material. After you have looked over the same, please return it to me with any suggestions as to changes that may occur to you. I will then have the application written in form for filing and sent to you for execution.

Please advise me if an assignment of this invention is to be made, and if so, to whom. Also please state your post office address to be inserted in the Petition.

Yours very truly,

HL-JS

Enc.



The Edison Portland Cement Co.

THOMAS A. EDISON, CHAIRMAN OF BOARD
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 J. LINTON THURGOOD, VICE-PRESIDENT
 H. F. MILAM, SECRETARY
 Wm. M. HURDIS, SUCY & CO., MANAGERS

Telegraph, Freight and Passenger Station, NEW VILLAGE, N. J.

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 BOSTON, MASS., Post Office Square Building
 SAVANNAH, GA., National Bank Building

P. O. ADDRESS, STEWARTSVILLE, N. J.

August 14, 1911.

Henry Lanahan, Esq.,

Edison Laboratory,

Orange, N. J.

Dear Sir:-

Herewith find patent application with a slight addition. No assignment will be necessary, as the matter is thoroughly understood by the Cement Co.

My post office address is

#111 No. Fourth Street, Easton, Penna.

Very truly,

HEK-RBS

ENCLOSURE:-

August 15, 1911.

Mr. Dyer:-

I have prepared an application on an invention of Dr. H. E. Kiefer of the Cement Company for rendering the potash in feld spar and the phosphoric acid in insoluble phosphates available as a fertilizer, which consists in subjecting a finely ground mixture of phosphate rock and feld spar to the action of heat in a rotary kiln. Mr. Edison is interested in this invention, and directed Dr. Kiefer to have the Legal Department file an application on it. When I sent the draft of this specification to Dr. Kiefer for his approval, I inquired whether an assignment of the invention was to be made. Dr. Kiefer's reply is as follows:- "No assignment will be necessary, as the matter is thoroughly understood by the Cement Company". Please advise me if we shall file the application without having an assignment made, and if so, to whom shall we charge the filing fee.

HL-JS

Henry Laugham
filed application with
assigns to Edison
for the Cement Co
See

August 16, 1911.

Dr. H. E. Kiefer,
c/o Edison Portland Cement Co.,
Stewartsville, N.J.

Dear Sir:-

I enclose herewith your patent application covering the invention of the Manufacture of Fertilizing Material. Please execute this application by signing your full name, that is, "Herman E. Kiefer", at the end of the petition on the outside page of the patent application, at the end of the oath, and at the top of the page containing the oath. The signature at the top of the page containing the oath should be witnessed by two witnesses and the oath should be attested by a notary public. The red sticker should be affixed to the oath over the place marked "Seal" in such a way as to hold the ends of the ribbon in place and the notary's seal should be impressed upon this red sticker.

After this document has been executed, please return it to us to be filed.

Very truly yours,

HL/ARK.

General Counsel.

PAPER 47-A



The Edison Portland Cement Co.

THOMAS A. EDISON, Chairman of Board
W. S. HALLGREN, President
J. LUTHER THOMPSON, Vice-President
H. P. MILLER, Treasurer
Wm. E. HOBBS, Sec'y and Asst. Treas.

1007
Telegraph, Freight and Passenger Station, NEW VILLAGE, N. J.

P. O. ADDRESS, STEWARTSVILLE, N. J.

SALES OFFICES:
PHILADELPHIA, Pa., Arcade Building
NEW YORK, N. Y., 25, Jones Building
NEWARK, N. J., 25, Jones Bldg.
BOSTON, MASS., Post Office Square Bldg.

February 14, 1912.

Mr. Henry Lanhlan,
Legal Department,
Edison Laboratory,
Orange, N. J.

Dear Sir:-

Some time ago we had some correspondence concerning application for a patent on rotary kiln process for burning phosphate rock, granites, or other rock containing potash. At our last interview there was one patent still to be heard from, but we do not believe this will interfere with the process in question.

Will you kindly forward us all papers on the same, so that we may outline the matter a little further, and see what can be done in the way of securing patent.

Very truly,


Chemist.

HEK-RBS

Feb. 15, 1912.

Mr. H. E. Kiefer,
c/o Edison Portland Cement Co.,
Stewartsville, N.J.

Dear Sir:-

Your letter of the 14th inst. addressed to Mr. Lanahan has been received, and he has requested me to send you our complete file containing your application together with the references cited therein, which application is entitled MANUFACTURE OF FERTILIZING MATERIAL, (our folio No. 777), and which I am sending you today by mail under separate cover.

Please arrange to return this file to me after you are finished with it, which should be about a month prior to October 2nd, 1912, at least.

Very truly yours,

ARK.

Clerk.



The Edison Portland Cement Co.

THOMAS A. EDISON, Chairman of Board
W. S. MALLOW, President
J. LINTON THOMPSON, Vice-President
H. W. MILLER, Treasurer
Wm. H. HOBBS, Sec'y and Asst. Treas.

Telephone, Freight and Passenger Station, NEW VILLAGE, N. J.

P. O. ADDRESS, STEWARTSVILLE, N. J.

SALING OFFICES:
PHILADELPHIA, Pa. Arcade Building
New York, N. Y. St. James Building
NEWARK, N. J. Union Building
HOBOKEN, N. J. First Office Square Bldg.
SAVANNAH, Ga. National Bank Building

February 17, 1912.

Mr. Henry Lannahan,
Edison Laboratory,
Orange, N. J.

Dear Sir:-

I am in receipt of papers pertaining to Phosphate Patents but do not find a copy of Cushman's patent #857992. It is not necessary to have this patent in full but some years ago I was a regular reader of the Patent Office Gazette and if this publication has not been discontinued you probably have files of it at Orange. The condensed description of the patent covers 10 or 20 lines only and if you will kindly have your stenographer copy this abstract for me it will be of great assistance.

Very truly,


Chemist.

HEK-FB

Sept. 10, 1912

Dr. H. E. Kiefer,
Edison Portland Cement Co.,
Stewartsville, N. J.

Dear Sir:-

On February 15th last, the complete file of your application Folio 777, Manufacture of Fertilizing Material, together with the references cited therein, was mailed to you from this office. This application should now be taken up for amendment. Will you kindly return the complete file to me as promptly as possible, together with your comments and suggestions. The amendment must be in the Patent Office prior to October 2nd.

Yours very truly,

HL-JS



The Edison Portland Cement Co.

THOMAS A. EDISON, Chairman of Board
W. B. MALLORY, President
J. EDISON THOMPSON, Vice-President
H. P. MILLER, Treasurer
Wm. H. HOBBS, Secy and Asst. Treas.

Telegraph, Freight and Passenger Station, NEW VILLAGE, N. J.

P. O. ADDRESS, STEWARTSVILLE, N. J.

SALES OFFICES:
PHILADELPHIA, Pa., Arcade Building
NEW YORK, N. Y., 55, Jones Building
NEWARK, N. J., St. James Bldg., N. Y.
BOSTON, MASS., Post Office Square Bldg.

Sept. 17, 1912.

Mr. Henry Lanahan, Esq.,
Edison Laboratory,
Orange, N. J.

Dear Sir:-

Herewith find all papers pertaining to the fertilizer process. I have gone over them as time permitted and dealt only with the patents referred to in Patent Office communication of Oct. 2 - 1911. I have attached comments to each of these patents.

None of them conflict with us but Wolters is the nearest. If a rotary Kiln be used in his process instead of a Siemens furnace and the material reduced to clinker only instead of "a fluid molten state" then our process is anticipated.

Newberry uses a rotary Kiln for a different kind of a fertilizer and if we are not allowed to combine Wolters and Newberrys processes we have no claim but it looks to me as though the adaption ^{to} of a rotary kiln to Wolters materials is new notwithstanding that Newberry uses a rotary kiln on other fertilizing materials. Of course I do not know.

The Patent Office exception to the large number of claims looks reasonable. We could simplify it by

Mr. H. L.

-2-

9-17-1912.

making a few specific claims on the use of a rotary kiln for clinkering ^{or} not completely fusing a mixture of natural phosphates and silicates containing alkalies for the purpose of rendering both phosphoric acid and alkalies soluble. There is nothing else to the process and the simpler we make it the better it looks.

The Patent Office communication refers to "calcining" of phosphates in a rotary kiln. We do more than calcining we carry to incipient fusion.

In view of the various patents I do not know whether it is advisable to spend much more money on it. Nevertheless I have given you the data and if you think a simplified amendment claiming only what I have outlined above will be granted it might be worth a trial.

Very truly,

H. C. Kiefer
Chemist.

HEK-FS

ENCLOSURES:-

extra copy
of

777

comes in
order 1001

August 18, 1913

H. E. Kiefer, Esq.,
Edison Portland Cement Company,
Stewartville, New Jersey

Dear Sir:

In compliance with your request of the 14th inst., I am sending you today, by express, the complete file containing your application, together with the references cited therein, said application being entitled Manufacture of Fertilizing Material (our Folio No. 777).

I do not understand that it has been finally determined to drop this application, and in case it is to be dropped, we should like to have Mr. Edison's authority for such action. I should be glad to have your views as to the advisability of proceeding with the prosecution of the application, or to have you take the matter up with Mr. Edison personally, if you desire.

The next amendment must be filed in the Office before October 30th, and if the application is to be amended, this file should be returned to the Legal Department not later than the 1st of October.

Very truly yours,

HL/HJL

F 777

October 8, 1913

Mr. H. E. Kiefer,
Edison Portland Cement Co.,
Stewartsville, N. J.

Dear Sir:-

The next amendment in your application entitled Manufacture of Fertilizing Material, our Folio No. 777, must be filed in the Patent Office before October 20th. The complete file of this application was sent to you about the 18th of August last. Will you kindly return the same to this department as soon as practicable in order that the matter of the amendment may be taken up. Also kindly let me have your views as to the advisability of proceeding with the prosecution of the application.

Very truly yours,

HL-JS

Forward Mr. Kiefer Oct 15, 1913.

Form 47-A



The Edison Portland Cement Co.

THOMAS A. EDISON, Chairman of Board
W. S. MALLORY, President
J. LINTON THOMPSON, Vice-President
H. F. MILLER, Treasurer
Wm. H. HOSKIN, Secy and Asst. Treas.

Telegraph, Freight and Passenger Station, NEW VILLAGE, N. J.

P. O. ADDRESS, STEWARTSVILLE, N. J.

SALES OFFICES:
PHILADELPHIA, PA., Arcade Building
NEW YORK, N. Y., St. James Building
BOSTON, N. J., St. James Building
BOSTON, MASS., Post Office Square Bldg.

Oct. 15, 1913

Henry Lenahan, Esq.,
Legal Department,
Edison Laboratory,
Orange, N. J.

Dear Sir:-

Mr. Mallory and I have discussed the
matter very fully and in view of the narrowness
of any claims that might now be allowed, have decided
to drop the present application. (F777)

Very truly,

H. S. Siefert
Chemist.

P. S. Am returning all papers under another cover.

Patent Series

Patent Application Files

Folio # 785 Charging Secondary Cells and Utilizing the Current
Therefrom

Serial #: 651697

Primary Applicant: Hutchison, Miller Reese

Date Executed: 9/26/1911

Folio No. 725Serial No. 651,697

Applicant.

Address.

Miller Reese Hutchison,
West Orange, New Jersey.

Title Charging Secondary Cells and Utilizing the Current
Therefrom.

Filed September 28th, 1911.Examiner's Room No. 105Assignee Edison Storage Battery Company.Ass'g't Exec. Sept. 26, 1911. Recorded Sept. 28/11 Liber 4,88 Page 26

Patent No. _____

Issued _____

ACTIONS.

- | | | | |
|----|------------------------------|----|----------------------------------|
| 1 | Chg'd. Miller, Jan. 11, 1912 | 10 | After this action |
| 2 | Amended January 6, 1913 | 17 | was not registered |
| 3 | | 18 | was not registered |
| 4 | | 19 | Registered |
| 5 | | 20 | |
| 6 | | 21 | Drop This |
| 7 | | 22 | |
| 8 | | 23 | in USA foreign |
| 9 | | 24 | |
| 10 | | 25 | These instructions written by |
| 11 | | 26 | Mr. Edison Feb. 26, 1911 in view |
| 12 | | 27 | of imperativeness of system as |
| 13 | | 28 | described - See Herman 727- |
| 14 | | 29 | and after conference with Mr. |
| 15 | | 30 | Hutchison. <u>Ed.</u> |

Vault

FRANK L. DYER,

Counsel,

Orange, New Jersey.

*Miller Reese Hutchinson, Inventor,
Residence 24 Hight St., Orange, N.J.*

Petition.

To the Commissioner of Patents:

Your Petitioner **MILLER REESE HUTCHISON**
a citizen of the United States, residing and having a Post Office address at
West Orange, Essex County, New Jersey

prays that letters patent may be granted to him for the improvements in

CHARGING SECONDARY CELLS AND UTILIZING THE CURRENT
THEREFROM

set forth in the annexed specification; and he hereby appoints Frank L. Dyer
(Registration No. 560), of Orange, New Jersey, his attorney, with full
power of substitution and revocation, to prosecute this application, to make
alterations and amendments therein, to receive the patent, and to transact all
business in the Patent Office connected therewith.

Miller Reese Hutchinson

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, MILLER REESE HUTCHISON, a citizen of the United States and a resident of West Orange, in the County of Essex and State of New Jersey, have invented certain new and useful improvements in CHARGING SECONDARY CELLS AND UTILIZING THE CURRENT THEREFROM, of which the following is a specification:-

My invention relates generally to a method and means for charging one or a battery of secondary or reversible cells and for utilizing the current therefrom, and more particularly to the charging of such cells from a source of current which is inadequate to charge the cell or battery efficiently in the ordinary manner, and to the utilization of current from one or more groups of elements of such cells at a time. My invention is also particularly adapted to the charging of secondary cells which are located in confined spaces difficult to cool and ventilate.

In modern storage battery development the tendency is toward the employment of large cells, each having a great number of positive and negative elements or plates. This is especially true in submarine boat practice, and is occasioned by the great increase in size of such boats as the art progresses. One of the greatest difficulties met with in the operation of storage batteries in submarines lies in the necessarily inadequate facilities for ventila-

tion and cooling. In such vessels there is not sufficient space available to permit the provision of large air ducts into, through and out of the battery tanks or receptacles. Furthermore, relatively large exhaust ports of this character are not permissible in submarine boat design, because such vessels must have as few and as small outlets as possible, to facilitate water tightness under great hydrostatic pressure. The difficulties of cooling and ventilation are increased where lead or acid storage battery cells are employed. Owing to the fragility of the hard rubber containing jars of cells of this type, it is necessary to reinforce them by placing them in compartments of the battery tank of the boat in such a manner that the fore and aft and cross members of the compartments will support the containing jars and provide the requisite mechanical strength for the same. It is apparent that a cell placed in such a compartment and fitting tightly therein cannot be cooled except from the top. For these reasons and also on account of the poor heat conducting properties of hard rubber and wood, it is found difficult to charge the batteries of submarines in tropical waters within a reasonable length of time because of the injury done to a lead cell by allowing the temperature of the cell to rise above 110° Fahr. These conditions necessitate charging the batteries for a long time at a low rate, or for a short time at normal rate until the temperature limit has been reached, and then disconnecting and allowing them to cool before continuing the charge. In the case of storage battery cells of the Edison type, no serious permanent injury is done

the cells by charging them at high temperatures. When charged in this manner, however, their efficiency for that charge is decreased. When cells of the Edison type are used in submarine boats, the cells may be spaced apart by vertical separators, and the containing cans being of metal, have better heat conducting and radiating properties than those of the lead or acid cells. With this arrangement, air may be taken into the battery tank at the bottom of one end and drawn out from the top of the tank at the other end, whereby a flow of air by and between all the cells is obtained. But even with such an improved installation it is a difficult matter to cool the interior of a very large cell and there is not sufficient space available to permit making the cells up in smaller sizes and paralleling them. In the case of Edison type cells of high discharge rate capacity and low internal resistance, the maximum efficiency is obtained by charging at relatively high rates. For example, while the large tube type cell can be charged efficiently at the 7-hour rate, the small tube type should be charged at not less than a 3-hour or 4-hour rate and is preferably charged at a 2-hour rate where the cells can be cooled properly. The charging of batteries in submarine vessels is often done by driving the motor as a dynamo when the boat is being propelled on the surface by the oil engines. Such motors are seldom capable of furnishing sufficient current to charge the battery in three or four hours, even though the engines be large enough to drive both boat and generators.

The objects of my invention are to overcome many of the difficulties hereinbefore pointed out and to provide

an efficient method and means for charging secondary cells which require charging at a rate higher than is capable of being furnished by the source of current available when employing ordinary methods, and also to enable current from any desired number of groups of elements of secondary cells to be efficiently and readily utilized. My improved method consists generally in supplying current to one or more groups of the elements or plates of the cells at a time, and also, when desired, in utilizing ¹⁶current by taking it ^{from} from any desired number of such groups of elements. 14

In order to render my invention more easily understood, reference is had to the drawing accompanying and forming a part of this specification, and in which the figure illustrates diagrammatically an arrangement of circuits and apparatus adapted to carry out my invention.

In the drawing, secondary or reversible cells are shown at A and B. It will be apparent that my invention is applicable to a single cell or to any number of cells. The positive and negative elements of each of the cells are arranged in ^{separate} groups and each group is preferably provided with its own insulated binding posts or other terminals. I have illustrated each of the cells as divided into four groups of elements. The groups of positive elements of cell A are indicated at A 1, A 2, A 3, and A 4 and are provided with binding posts or other terminals A 5, A 6, A 7, and A 8 respectively. The groups of negative elements are indicated at A 9, A 10, A 11, and A 12 and are provided with the binding posts or other terminals A 13, A 14, A 15, and A 16 respectively. The groups of positive

elements A 1, A 2, A 3, and A 4 are associated with the groups of negative elements A 9, A 10, A 11 and A 12 respectively. The cell B has its elements arranged in the same manner as those of the cell A. The first group of elements of this cell comprises the positive elements B 1 and the negative elements B 2, the positive elements B 1 having connected thereto a binding post or other terminal B 5 and the negative elements B 2 having connected thereto a binding post or other terminal B 13. The second group comprises positive elements B 2 and negative elements B 10 provided with binding posts or other terminals B 6 and B 14 respectively. The third group comprises positive elements B 3 and negative elements B 11 provided with binding posts or other terminals B 7 and B 15 respectively. The fourth group comprises positive elements B 4 and negative elements B 12 provided with binding posts or other terminals B 8 and B 16 respectively. Each of the groups of elements of each of the cells may comprise the same number of positive elements as of negative elements, as for example, fifteen of each, or preferably there is one more negative element than positive element in each group, as, for example, fifteen positive elements and sixteen negative elements.

As a means for charging the battery and as illustrating my improved method, the following arrangement of circuits may be employed:- Direct current mains are shown at 1 and 2 and are provided with suitable terminals 3 and 4 respectively, which are adapted to be connected to any suitable source of current, as, for example, the generator D, by means of the switch S, the terminal 3 being in-

tended to be connected to the positive brush or terminal of the source of current, and the terminal 4 being intended to be connected to the negative brush or terminal of the source of current. The generator D may be a dynamo electric machine adapted to be driven at other times as a motor by current supplied from the battery.

For charging the first group of elements of each cell, a double pole switch 5 is provided, having one terminal connected to the positive direct current main 1 by the conductor 6 and another terminal connected to the negative direct current main 2 by the conductor 7. The terminal of the switch 5 which is adapted to be connected to the positive side of the direct current main 1 through the conductor 6 when the switch is closed is connected to the positive terminal A 5 of the first group of elements of the cell A by the conductor 8, and the terminal of the switch 5 which is adapted to be connected to the negative direct current main 2 through the conductor 7 when the switch is closed is connected by the conductor 9 to the negative terminal B 12 of the first group of elements of the cell B. The negative terminal A 13 of the first group of elements of the cell A is connected by the conductor 10 to the positive terminal B 5 of the first group of elements of the cell B. For charging the second group of elements of each of the cells, a double pole switch 11 is provided having one terminal connected to the positive direct current main 1 by the conductor 12 and another terminal connected to the negative direct current main 2 by the con-

ductor 13. The terminal of the switch 11 which is adapted to be connected to the positive direct current main 1 through the conductor 12 when the switch is closed is connected by the conductor 14 to the positive terminal A 6 of the second group of elements of cell A, and the terminal of the switch 11 which is adapted to be connected to the negative direct current main 2 through the conductor 13 when the switch is closed is connected by the conductor 15 to the negative terminal B 14 of the second group of elements of the cell B. The negative terminal A 14 of the second group of elements of the cell A is connected by the conductor 16 to the positive terminal B 6 of the second group of elements of the cell B. For charging the third group of elements of each of the cells, a double pole switch 17 is provided having one terminal connected to the positive direct current main 1 by the conductor 18 and the other terminal connected to the negative direct current main 2 by the conductor 19. The terminal of the switch 17 which is adapted to be connected to the direct current main 1 through the conductor 18 when the switch is closed is connected by a conductor 20 to the positive terminal A 7 of the third group of elements of the cell A, and the terminal of the switch 17 which is adapted to be connected to the negative direct current main 2 through the conductor 19 when the switch is closed is connected by conductor 21 to the negative terminal B 15 of the third group of elements of the cell B. The negative terminal A 15 of the third group of elements of the cell A is connected by the conductor 22 to the positive terminal B 7 of the third group of elements of the cell B. For charging the fourth

group of elements, a double pole switch 23 is provided having one terminal connected by the conductor 24 to the positive direct current main 1 and another terminal connected by a conductor 25 to the negative direct current main 2. The terminal of the switch 23 which is adapted to be connected to the positive direct current main 1 through the conductor 24 when the switch is closed is connected by a conductor 26 to the positive terminal A 8 of the fourth group of elements of the cell A, and the terminal of the switch 23 which is adapted to be connected to the negative direct current main 2 through the conductor 25 when the switch is closed is connected by a conductor 27 to the negative terminal B 16 of the fourth group of elements of the cell B. The negative terminal A 16 of the fourth group of elements of the cell A is connected by the conductor 28 to the positive terminal B 8 of the fourth group of elements of the cell B.

When charging the cells, one or more of the switches may be closed at one time, while the remainder of the switches remain open. For example, the switch 5 may be closed first and a circuit is thus established from the positive direct current main 1 through the conductor 6, through one member of the switch 5, through the conductor 8 to the positive terminal A 5 of the first group of elements of the cell A, through the first group of elements A 1 and A 9 of the cell A to the negative terminal A 13 of the first group of elements of the cell A, through the conductor 10 to the positive terminal B 5 of the first group of elements of the cell B, through the first group

of elements B 1 and B 2 of the cell B to the negative terminal B 13, through the conductor 2, through one member of the switch 5 and the conductor 7 to the negative direct current main 2. In this manner, the first group of elements of each of the cells is charged. After this group of elements has been charged, the switch 5 is opened and the switch 11 closed. The closing of the switch 11 establishes a circuit from the positive direct current main 1 through the second group of elements of each cell and back to the negative direct current main 2. After this group of elements has been fully charged, the switch 11 is opened and the switch 17 closed. The closing of the switch 17 establishes a circuit from the positive direct current main 1 through the third group of elements of each cell and back to the negative direct current main 2. After this group of elements has been fully charged, the switch 17 is opened. The switch 23 is then closed and the closing of this switch establishes a circuit from the positive direct current main 1 through the fourth group of elements of each cell and back to the negative direct current main 2. After this group of elements has been charged, the switch 23 may be opened. Obviously, it is immaterial in what order the switches are closed. Under certain circumstances, it may be advantageous to close several of the switches at a time as, for example, switches 5 and 17 at one time, and 11 and 23 at another. After all the groups of elements have been charged, the source of current can be disconnected from the terminals 3 and 4, as by opening the switch 2.

It will be apparent that I have provided a method for charging a battery requiring a high charging rate from a source of current inadequate to supply current at the charging rate required for the entire battery when charged in the ordinary way. For example, if in the battery illustrated, in which there are four subdivisions, a current of 2400 amperes is required to efficiently charge the battery, the charging may be efficiently accomplished by my improved method from a source of current capable of supplying only 600 amperes. Furthermore, in charging a battery by my improved method, the advantage of having a large quantity of electrolyte is obtained, and the heating is materially reduced both on account of the relatively small current employed and the large quantity of electrolyte present to radiate the heat through the relatively large containing can.

After the battery has been charged, ~~the current may be utilized by closing all of the switches 5, 11, 17 and 23, and current taken from the battery by connecting the terminals 3 and 4 to a circuit containing suitable translating~~ ^{motor} ~~devices, as, for example, the circuit containing the lamps~~ _{14/2} ~~1, by means of the switch 8. Or, if desired, the generator~~ ~~1 may be run as a motor from the battery by connecting the terminals 3 and 4 to the circuit containing the same by means of the switch 8. It may also be desired to utilize the current from only one or two or three groups of elements in parallel, keeping the other groups for emergency work. It is well known that the electromotive force of a cell is highest at the beginning of discharge, and current taken from a single fully charged group of elements may be utilized for running the motor on short runs or practice cruises. The recharging of the battery is thus facilitated, and fully charged groups are always available for emergencies.~~

Having now described my invention, what I claim
as new and desire to protect by Letters Patent of the
United States is as follows:-

- Insert 11th independent claim 11.5*
1. The method of charging a secondary cell, which consists in supplying current to some of the elements of the cell during one period and to other elements during another period, substantially as set forth.
 2. The method of charging a battery of secondary cells, which consists in supplying current to some of the elements of each cell during one period and to other elements of each cell during another period, substantially as set forth.
 3. The method of charging a secondary cell, which consists in supplying current successively to groups of elements of the cell, substantially as set forth.
 4. The method of charging a battery of secondary cells, which consists in supplying current successively to a group of elements of each cell, substantially as set forth.
 5. The method of charging a battery of secondary cells, which consists in supplying current to groups of elements in succession, each group containing one group of elements of each cell, substantially as set forth.
 6. The combination of a sub-divided secondary cell and means for supplying current to any desired sub-division of the cell, substantially as described.

single groups of elements and

7. The combination of a battery of sub-divided secondary cells, connections between sub-divisions of different cells, and means for supplying current to any desired set of connected sub-divisions, substantially as described.

8. A secondary cell having groups of elements, each group being provided with terminals, substantially as described.

9. A secondary cell having groups of elements, each group being provided with terminals, and means for connecting each group of elements in a separate circuit, substantially as described.

10. The combination of a secondary cell having its elements arranged in groups, and a separate circuit for each group of elements, substantially as described.

11. The combination of a battery of secondary cells, each cell having its elements arranged in groups, and means for connecting in separate circuits one group of elements of each cell, substantially as described.

12. The combination of a battery of secondary cells, each cell having its elements arranged in groups, and means whereby separate circuits may be successively established containing one group of elements of each cell, substantially as described.

13. The combination of a battery of secondary cells, each cell having its elements arranged in groups,

a source of current, and means for connecting in a single circuit with the source of current one group of elements of each cell, substantially as described. X

14. The combination of a battery of secondary cells, each cell having its elements arranged in groups, a source of current and means for connecting successively in a single circuit with the source of current one group of elements of each cell, substantially as described. X

15. The method of utilizing current from a secondary cell, which consists in taking current from some of the elements of the cell during one period and from other elements during another period, substantially as set forth.

16. The method of utilizing the current from a battery of secondary cells, which consists in taking current, from some of the elements of each cell during one period and from other elements of each cell during another period, substantially as set forth.

17. The method of utilizing current from a secondary cell, which consists in taking current successively from groups of elements of the cells, substantially as set forth.

18. The method of utilizing current from a battery of secondary cells, which consists in taking current successively from a group of elements of each cell, substantially as set forth.

19. The method of utilizing current from a battery of secondary cells, which consists in taking current from groups of elements in succession, each group containing one group of elements of each cell, substantially as set forth.

20. The combination of a sub-divided secondary cell and means for ^{leading to} utilizing current from any desired sub-division of the cell, substantially as described.

21. The combination of a battery of sub-divided secondary cells, connections between sub-divisions of different cells, and means for ^{utilizing} utilizing current from any desired set of connected sub-divisions, substantially as described.

22. The combination of a battery of secondary cells, each cell having its elements arranged in groups, a translating device, and means for connecting in a single series with the translating device one group of elements of each cell, substantially as described.

23. The combination of a battery of secondary cells, each cell having its elements arranged in groups, a translating device, and means for connecting successively in a single circuit with the translating device one group of elements of each cell, substantially as described.

24. The combination of a battery of secondary cells, each cell having its elements arranged in groups, a translating device, and means for connecting in a single circuit with the said translating device any desired number of groups of elements of each cell, substantially as described.

25. The combination of a secondary cell having its elements arranged in groups, a discharge circuit, and means for discharging any desired number of said groups through said discharge circuit, substantially as described.

This specification signed and witnessed this 26th day of September 1911.

Witnesseth:

Miller Reese Hutchison

1. Henry L. Latham
2. Anna P. Kellum

Oath.

State of New Jersey } ss.,
County of Essex }

MILLER REESE HUTCHISON, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of West Orange, Essex County, New Jersey

that he verily believes himself to be the original, first and sole inventor of the improvements in

CHARGING SECONDARY CELLS AND UTILIZING THE CURRENT THEREFROM

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

Miller Reese Hutchison

Sworn to and subscribed before me this 26th day of September 1911.

[Seal]

NOTARY PUBLIC
MILLER REESE HUTCHISON
Notary Public.

Div. ---26. Room ---105
Address only.
"The Commissioner of Patents,
Washington, D. C."

2-200

V00

Paper No. ---2---
All communications respecting this
application should give the serial number,
date of filing, and title of invention.

785
DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

January 11, 1912.

Miller R. Hutchison,

c/o Frank L. Dyer,

Orange, N. J.

Please find below a communication from the EXAMINER in charge of your application.
for Charging Secondary Cells and Utilizing the Current There-
from, filed Sept. 28, 1911, Serial No. 651,697.

E. B. Moore

Commissioner of Patents.

Division is required in this case between claims 1 to 5, inclusive, which cover an alleged method of charging storage batteries, claims 6, 7, 9 to 14, inclusive, which are drawn to an apparatus for charging storage batteries, claim 8, which covers merely a specific form of battery cell, and claims 15 to 28, inclusive, which cover an alleged method and apparatus of utilizing battery current.

Further action on the merits is postponed until this requirement shall have been complied with.

As the result of a cursory examination the patents to:

King, 653,093, July 3, 1900, 171-Systems, Secondary Battery,
End Cell, and
Flick, 370,134, Sep. 20, 1887, (204-29),
are cited.

IN THE UNITED STATES PATENT OFFICE

Miller Reese Hutchison
CHARGING SECONDARY CELLS AND
UTILIZING THE CURRENT THEREFROM
Filed September 28, 1911
Serial No. 651,697

Room No. 105

HONORABLE COMMISSIONER OF PATENTS.

S I R :

In response to the Office action of
January 11, 1912, please amend the above entitled case as
follows:-

Page 4, line 9, cancel "utilizing current by".
Same line, change "it" to - current - . Same page, line
20, before "groups" insert - separate - .

Page 10, cancel lines 17 to 20 inclusive and
substitute therefor the following - After the battery has
been charged, current may be taken from it and utilized by
closing all of the switches 5, 11, 17 and 23, and connect-
ing the terminals 3 and 4 to a circuit containing suitable
translating - .

Substitute the following claims for those now in
the application: -

1. The method of charging a secondary cell, which
consists in supplying current to some of the positive and
negative elements of the cell during one period and to
other positive and negative elements during another period,
substantially as set forth.

2. The method of charging a battery of secondary cells, which consists in supplying current simultaneously to some of the elements of each cell during one period, and supplying current simultaneously to other elements of each cell during another period, substantially as set forth.

3. The method of charging a secondary cell, which consists in supplying current successively to groups of elements of the cell, substantially as set forth.

4. The method of charging a battery of secondary cells, which consists in supplying current through different paths through the cells during different periods, each path including positive and negative elements of each cell, substantially as set forth.

5. The combination of a sub-divided secondary cell and means for supplying current to any desired sub-division of the cell, substantially as described.

6. The combination of a battery of sub-divided secondary cells, connections between sub-divisions of different cells, and means for supplying current to any desired set of connected sub-divisions, substantially as described.

7. The combination of ^aa secondary cell having groups of elements, each group being provided with terminals, and means for connecting each group of elements in a separate circuit, substantially as described.

8. The combination of a secondary cell having its elements arranged in groups, and a separate circuit for each group of elements, substantially as described.

9. The combination of a battery of secondary cells, each cell having its elements arranged in groups, and means whereby separate circuits may be successively established, each said circuit containing a group of elements of each cell, substantially as described.

10. The combination of a battery of secondary cells, each cell having its elements arranged in groups, a source of current, and means for connecting in circuit with the source of current one or more groups of elements of each cell, substantially as described.

11. The method of discharging a secondary cell, which consists in taking current from some of the positive and negative elements of the cell during one period, and from other positive and negative elements during another period, substantially as set forth.

a 12. The method of discharging a battery of secondary cells, which consists in taking current simultaneously from some of the elements of each cell during one period, and in taking current simultaneously from other elements of each cell during another period, substantially as set forth.

13. The method of discharging a secondary cell, which consists in taking current successively from groups of elements of the cell, substantially as set forth.

14. The method of discharging a battery of secondary cells, which consists in taking current from the cells through different paths through the cells during different periods, each path including positive and negative elements of each cell, substantially as set forth.

15. The combination of a sub-divided secondary cell, and means for taking and utilizing current from any desired sub-division of the cell, substantially as described.

16. The combination of a battery of sub-divided secondary cells, connections between sub-divisions of different cells, and means for taking and utilizing current from any desired set of connected sub-divisions, substantially as described.

17. The combination of a battery of secondary cells, each cell having its elements arranged in groups, a translating device, and means for connecting in circuit with the translating device one or more groups of elements of each cell, substantially as described.

18. The combination of a battery of secondary cells, each cell having its elements arranged in groups, an electrical device, and means for connecting in circuit with said device any desired number of groups of elements of each cell, substantially as described.

19. The combination of a battery of secondary cells, each cell having its elements arranged in groups, a source of current, a translating device, and means for connecting in circuit with either the source of current or the translating device any desired number of groups of elements of each cell, substantially as described. -

REMARKS

The claims have been rewritten for the purpose of better defining applicant's invention and in partial com-

pliance with the requirement of division. In the Office action of January 11, 1912, division was required between groups of claims covering subject matter as follows:-

- (a) Method of charging storage batteries
- (b) Apparatus for charging storage batteries
- (c) A specific form of battery cell
- (d) Method and apparatus for utilizing battery current

In the claims now submitted there is no claim for a storage battery cell per se. It is believed that the claims now presented are properly examinable in a single application. All of the apparatus claims read upon the single figure of the drawing and some of them, for example, claims 7, 8, 9, 18 and 19, cover systems adapted for either charging or discharging a cell or battery or for both. The apparatus claimed is adapted for carrying out either the process of charging a cell or battery or for discharging a cell or battery or for both. Furthermore, it is believed that the requirement of division between claims for the method of charging storage batteries and for the apparatus adapted for use for that purpose is not a proper one, because of the relation between the process and apparatus. In this connection reference is made to *Steinmetz vs. Allon*, 109 O.G., 549, in which the Supreme Court held that the statute gives the right to join inventions in one application in cases where the inventions are related, the particular case under consideration being an application containing both process and apparatus claims. In a subsequent decision by the Commissioner of Patents, *Ex parte Ament*, 116 O.G.,

596, it was held that process and apparatus claims may in some cases be so related as to make it proper to include them in one application, that a requirement of division should not be based upon the broad and general proposition that the process and apparatus are always independent, and that if the Examiner should conclude that the particular process and particular apparatus under consideration are not so related as to warrant including them in one case, he should state his reasons for this conclusion. Furthermore, in ex parte Steinmetz, 117 O. G., 901, where the Steinmetz application was again under consideration, the Commissioner said:- "The sole question presented for decision is whether the subject matter stated in the process claims is so separate and independent of the subject matter stated in the apparatus claims as to warrant requiring that the claims be presented in separate applications". It is also believed that the field of search and classification is the same for all of the claims now in this application. Reconsideration of the requirement of division insofar as it relates to the subject matter of the claims now submitted, and action on the merits are requested.

Respectfully submitted,

MILLER REESE HUTCHISON

By Frank L. Dyer

His Attorney

Orange, New Jersey

January 6, 1913...

Div. 26 Room 105
Address only
"The Commissioner of Patents,
Washington, D. C."

2-200

VOC

Paper No. 5
All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

May 6, 1913.

Frank L. Dyer,
Orange,
New Jersey.



Please find below a communication from the EXAMINER in charge of the application of
Miller R. Hutchison, Serial No. 651,697, filed Sept. 28, 1911,
for Charging Secondary Cells and Utilizing the Current Therefrom.

4 6-3021

E. B. Moore

Commissioner of Patents.

In response to amendment of Jan. 7, 1913.

It does not seem to the examiner that there is such an intimate relation between the method and apparatus claims in this case that they should be permitted to stand in a single application. In this connection applicant's attention is directed to the decision in ex parte McMahon, 48 O. G., 255. Consequently, division is required between claims 1 to 4, constituting one set, claims 5 to 10 and 15 to 19, constituting another set, and claims 11 to 14, constituting a third set.

Received from
Mr. H. H. H. H.
Aug 14, 1911
JH

Method of Subdividing the elements of a Storage or "Secondary" Cell into Groups.

To be arranged for
Electric Storage Battery

The tendency of Modern Storage Battery Development and use is toward large cells, having a great number of positive and negative "Platts". Especially does this obtain in Submarine Boat practice, occasioned by the great increase in size of such boats as the war progresses.

One of the greatest difficulties met with in the operation of Storage Batteries in Submarines lies in the necessarily inadequate ventilation or cooling. There is not sufficient space available to permit of large air ducts with numerous and fine of the Battery Janks, even in the relatively large "Spanner Boat" design. It behooves the designer of such boats to have as few and as small outlets as possible, owing to difficulty in rendering such water tight and air proof the passages of deep diving. In present practice, lead or acid storage cells are employed, owing to the fragility of the hard rubber containers for such cells. It becomes necessary to reinforce same by placing iron compartments either within same or over the cells and off and close members of such compartments offering sufficient mechanical strength.

It is apparent that a cell placed in such compartment, and a relatively light jar, cannot be corded except from the top.

It is for this reason in addition to the poor heat conducting qualities of lead rubber and wood that Submarines, in liquid tanks, and in dry compartments charge the batteries with

John J. H. H.

John J. H. H.
1911

W. H. H. H.
W. H. H. H. Aug 12/11.

-2-

reasonable length of time, because of the injury done to a "lead" cell by allowing the cell temperature to exceed 110 degrees Fahrenheit. Temperature changes for a short time, or until safe temperature limits have been reached, and then disconnect and allow the cell to cool slowly before continuing the charge.

This same feature obtains with the Edison cell, except that no permanent injury is done once cells are charged at high temperatures. The difficulties arise in the cost of recovery of such cells when charged thus.

As placed in a Submarine Report, the Edison cells are spaced by vertical separators. The containers are one of metal, with consequent battery rusting quality. The air is taken from the battery tank or the bottom of the end and from the top of the tank and, ensuring flow of air up and bottom all the cells.

But now with such ideal insulation it becomes a difficult matter to cool the interior of a room sized cell. For this reason is not available a design by making the cells up in smaller sizes and paralleling them. Space is the important feature.

With Edison cells a high discharge rate capacity and low internal resistance, maximum efficiency is attained in relatively high charging rates. For instance while the large rate type cell can be charged at the 7 hour rate, the small rate type must be charged at a 3 hour or 4 hour rate - preferably at further hours after if they can be easily accepted.

The element of Submarine Batteries is given due to the "mole" as a dynamic system that has to be pumped in the surface by the cell charges. Solenoid motor system.

Hutchins Staff, Anna P. Kleiman

MRH, 1/2/11

③ 15

So it is apparent that, inasmuch as parallel many smaller cells is impracticable, the large cells must be so devised as to permit of such charging by parallel sources of supply.

It is therefore the object of this invention to make such provision:



FIG 11

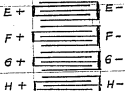


FIG 2.

Fig. I

$A+$ represents a group of, say, 15 positive plates
 $A-$ " " " " " " 15 negative "

A - 15 negative

$$\mathbb{B} + \{ \text{distr } A++A- \}$$

9-1

2-1-2	11	11	11
-------	----	----	----

$$\{D+\} \quad \text{,,}$$

D-5

Thanky the cell

Thank the cell of 60 pictures would
be divided up into four groups of
15 pictures + 1 negative each.

It is better practical to have one
more negative plate than total pro-
tectors in each group, hence in —

Fig 2:

15	positive
16	negative

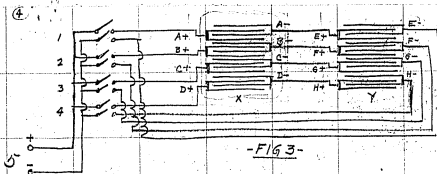
Ditto with F^+, F^- , G^+, G^-

Ex. 4. $7 \frac{2}{3} \div 1 \frac{1}{2}$ gives answer

all these elements as per Figs 1 + 2 are assembled in their respective large cans. A+B+C+D and G+H+C+D - being in one can, but each group insulated from the other as to terminals.

Witness 8/14/11 Anna P. Kleber

MAH. 8/12/11.



-FIG 3-

Fig 3 shows this arrangement applied to a battery of many cells, only two cells, X + Y, being indicated.

In this arrangement "5" is the supply circuit.

Connecting in parallel must be switches 1, 2, 3, 4, connecting + and - sides. These switches are connected respectively to the + and - groups as indicated.

For instance, if switch 1 is closed, current passes from + of 5 to A + of Cell X, through electrolyte to A - then to E + of cell Y, to E -, and to - side of switch 1.

When the first group of cells are charged, switch No 1 is opened, & # 2 closed, & so until all groups are charged.

When the switches 1, 2, 3, 4 may be closed all at same time or separately, depending on load demands.

This will be the same as paralleling cells in multiple when in use and switching to charge all cells of group # A, for instance before charging "B" group.

During this charge, however, each group has the advantage of not an excess of electrolyte and not consequent large radiation. Suitable for actual portable or semi-portable power arrangement is preferable to separate cells.

Kenneth Griffith Anna P. Kleban

M. J. Johnson
June 12/18

Mr. Dyer, ^{Laurelman} ^{Please take} ^{up with} ^{8/31/11.}

On Aug. 12th I handed over details of "Method of Subdividing the elements of a Storage or Secondary cell into Groups", for application to be made.

I cannot too earnestly urge expedition of doing this case. It is extremely important to us. Without the method it would be impossible for us to do any submarine work, because the 1/8" cells must be changed at 3 hour rate and our boat has capacity of dynamo to change at higher than 6 hour rate. Furthermore it is impossible to cool the cell when charged as a whole at the

3 hour rate. By dividing the elements into two groups I accomplish the practical result.

I have already had to divulge this to the electric Board and they are partly apt to butt in ahead of us as a lever if we leave the opening.

So please show this ahead of something else and let's get the application in. It is really a serious matter.

Laurelman

Edison Storage Battery Co.


 THOMAS A. EDISON

Orange, N.J., U.S.A.

McLanahan:

Occasion may arise when it is desired to discharge only one, two or three groups in parallel, keeping the fourth group for emergency work.

It is well known that the E.M.F. of a cell is higher at beginning of discharge than after it has been in use for some time. The speed of the motor under load & hence the speed of the boat depends upon the impressed E.M.F., because the higher the voltage the more current will flow. So, in slow cruising they can use only one or two elements and when speed work is desired, can throw the set out and put in the other three groups in parallel, with consequent benefit. When the E.M.F. of the 3 or two groups falls to that of #1 under load, all can be paralleled.

~~2. It is thought this should go with the~~

specifications & claims.

MAY

Mr. Hutchinson

Please look over this
revised specification and
make such suggestions
as to changes as you
may think proper.

Lanahan

9/21/11

Excellent
MAX

Sept. 26, 1911.

Mr. Dyer:-

The attached drawing is a part of an application about to be filed for an invention of Mr. Hutchison's relating to charging secondary cells and utilizing the current therefrom. Will you kindly sign this drawing. Mr. Hutchison has assigned the United States rights in this invention to the Storage Battery Co. and the foreign rights to Mr. Edison. Mr. Hutchison is of the opinion that foreign applications ought to be filed on this invention. Perhaps it would be well to postpone a consideration of this matter until we have received the first Patent Office action.)

HL-JS

Lanshan
OK *Lanshan*
Wm

January 18, 1912.

Mr. Dyer:

I hand you herewith an application of Mr. Hutchison's for Charging Secondary Cells and Utilizing the Current Therefrom, Folio 785, assigned to the Edison Storage Battery Company. The first Office action in this case is a requirement for division, and two references are cited as the result of a cursory examination. The invention is not disclosed in either of these references. Mr. Hutchison recommends that foreign applications be filed on this invention in the following countries: England, France, Germany, Italy, Russia, Japan, Argentina, Brasil and Chile.

Please advise me what you wish done in this matter.

HL-JS

Sauahau

Can wait return

Hutch

February 2, 1912.

Mr. Dyer,-

I have your memo 2038-A, of February 1, enclosing memo from Lanehan, in the matter of Foreign Patents for charging secondary cells, and utilizing the current therefrom, Folio 785.

This invention is of especial value on submarines and electric locomotives. Especially does this obtain in submarines, because there we have great difficulty in cooling the cells when charging rapidly. Of necessity, the size of the air intake and outlet pipes, for ventilating and cooling, are small, owing to the difficulty of occluding such a passage, if of considerable diameter, to prevent ingress of water, when submerged.

In this patent, I divide each cell into several groups, and treat each group separately. That is, supposing we have an S-20, consisting of twenty positive plates. This cell would be made up in two groups of ten positives and eleven negatives to each group, having their respective binding posts, but both groups submerged in the same electrolyte. All of No. 1 groups are connected together in series, and all of No. 2 groups are connected together in series. Naturally, when charging at a high rate, or in fact, at normal rate, in Tropical waters, the greater radiating surface per ampere passing through the cell, the more effectually will the cells be cooled. It is therefore evident that by charging all of the No. 1 groups first, and following by a charge of No. 2 groups afterward, we have a very flexible arrangement.

The use of lead storage batteries in submarines is attended by much difficulty in cooling, and this invention is applicable to lead cells as well as to Edison cells. The fact that it has not before been patented gives us a very excellent opportunity of shutting out the lead cell, and inasmuch as the use of large units in submarines is increasing rapidly, and South American Countries are entering very energetically into the construction of submarines, I deem it very important that we patent this feature in all Countries of any importance.

Another interesting feature of this invention is the ability to discharge the cells one group at a time. Supposing a submarine goes out for a practice run. She uses only No. 1 groups, and when she returns, charges that one group up. In the event of unforeseen conditions arising, she has No. 2 group always fully charged. This makes the boat more flexible in maneuvering, as she can

call on a freshly charged group of cells at any time,
for forced speed.

In the operation of electric locomotives charging at high rate, we would also divide the cells into two or three groups, thereby facilitating cooling when charging at high rates.

M. R. H. 

N. B. I am returning Lanahan's memo herewith.

February 13, 1912.

Mr. Dyer,-

The Submarine Cell patents have not, as yet, been prepared.

We are taking big chances.

I am called upon to furnish detail working drawings to the Wellman-Seaver-Morgan Company, and to the United States Government on this new pontoon crane battery, in which I will use S-6 cells. Construction cannot be started on the batteries until the drawings have been approved by the Navy Department. I do not dare to forward the drawings until the patents have been put into the office, because I have no way of determining as to who will see them after they leave our Works.

I also do not think the Foreign patents have been applied for, for this method of dividing the elements of a cell into groups. This is very important, as I am describing this feature to several Foreign Governments. Have to do it. This Submarine Battery matter has been in preparation now for a year and one-half, and I want to see some results come into that Factory.

I trust you will facilitate the patent end as much as possible, and thereby greatly oblige,

Yours sincerely,

Asch

Lewis: How
much will these
patents cost?

W. B.

100
7/10/2
100

February 15, 1912.

Mr. Dyer:-

In reply to your memo herewith, patents in the following countries will cost as follows:-

Country	First Cost	Before expiration
c - Great Britain - Harris & Miller	\$50.00	\$670.00
c - Germany - <i>Wagner & Sohn</i>	25.00	1765.00
c - France - <i>Proctor Bros</i>	44.00	800.00
c - Italy - "	44.00	649.00
c - Russia - "	75.00	1680.00
c - Japan - <i>Van Oldenneel</i>	90.00	375.00
c - Argentine - "	185.00	635.00
c - Brazil - "	125.00	890.00
c - Chili - "	175.00	250.00

(636)

Ans In the past we have taken out patents in Japan, Argentine, Brazil and Chili through Van Oldenneel, and I have taken the cost from his price list, but I find that Marks & Clerk's (New York) price list is considerably lower. If it is correct, we can have them attend to the filing of the applications and save about \$145.00.

F. D. Lewis

L-S

2/21/12 Instructed by Mr. Dyer to file applications in all of above-mentioned countries, except Chili. *HL*

and to take out the patents, wherever possible, in 1/2/12 Mr. Edison's name. *HL*

All papers sent off July 15, 1912.

February 21, 1912.

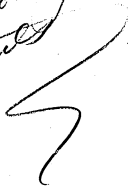
Mr. Hutchison:-

In the matter of your inventions on the submarine cell, Mr. Dyer has instructed me to prepare a single United States application including all of the features of this cell, and to defer the matter of foreign applications on this construction until after the filing of the United States application.

HL-JS

all of

This is pretty stiff
money — Don't think
we (Kates) indulge in
any more *Japan* things
Potatoes



RECEIVED
SEP 17 1912
FRANK L. DYER.

October 3, 1912.

Mr. Dyer:-

We have three patents in Japan and one pending application - all on storage batteries.

Folio 87 - Four years to run. Tax will total \$115.00

Folio 88 - " " " " " " " "

Folio 192- Seven " " " " " " " \$185.00

Pending application the one referred to in Van Oldenneel bill.

*Hutchison
\$44.00*
Folio 726 - Providing no appeal is necessary, this case will cost us before expiration \$245.00 taxes and about \$100.00 for working if the latter is done by advertising. The total, including first cost tax and working, will be about \$468.00. The above includes Van Oldenneel's services which are about 100% above actual Patent Office fees.

Argentine Republic

*Hutchison's case
in Argentina*
One pending application on Storage Battery (Hutchison case referred to in Van Oldenneel bill). Ten years - \$153.00. Tax for next nine years at \$25.00 per year will be \$225.00. Total without working \$378.00. The actual government fee for tax is about \$5.00. If we could arrange to pay it ourselves it will bring the total tax down to \$45.00. (Mr. Kennedy is looking into the matter)

Brazil

One pending application on Storage Battery (Hutchison case referred to in Van Oldenneel bill) Fifteen years - \$184.50. Taxes will amount to \$675.50 - total \$860.00 Van Oldenneel charge.

P. D. I.
Curran

PRESIDENT'S OFFICE

Memorandum

October 7, 1912.

226

Mr. Lewis:

Referring to the attached memorandum, is Folio

No. 726 the Hutchison patent in Japan? Also advise me if

there are any patents on the battery in Argentina on which

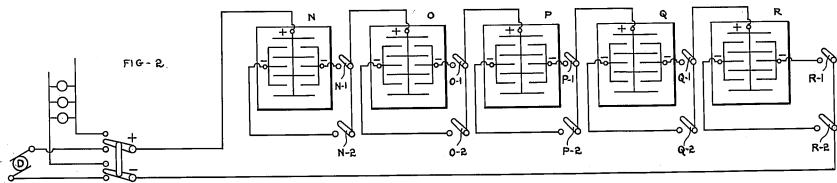
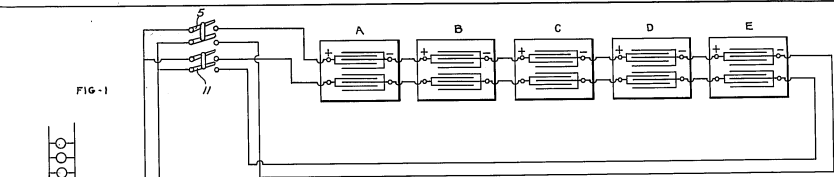
taxes are payable.

FLD/INN

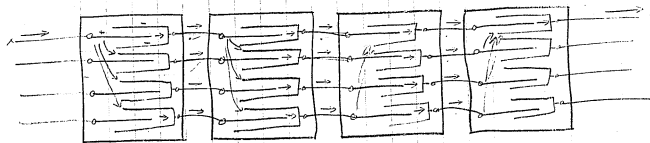
P. L. D.

Enc-

None - []



C Dec 11 1912



M4/15-4
3850



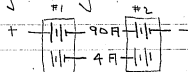
Coil

Jan. 20, 1913.

Mr. Hutchison,

I ran a test on 2 of the 3 C-12⁺ cells which I assembled some time ago. The third one showed no capacity after charge and when cut open the cover was found to be on wrong. As soon as the 3^d cell is formed I will run a test on the whole three.

With the two cells I found that on charging one half at 90-100 amps. the current through the other half was 4.5-3 amps. decreasing very slowly as the charge progressed



I believe that if for example we have 50 cells in series and

one side is being charged, there will be a leakage in each cell from the side being charged to the idle side. The result of this would be that the current in the idle side would increase from the ends of the series toward the center and in the same way the charging current in the side being charged would decrease from the end cells toward the center of the series of cells. If there were enough cells in the series, the currents thru the idle and charging sides would be equal at the middle of the series.

Resp. Curzon

Mr. Lanan

re applications for Patents on
"Secondary cells charging same &
utilizing Answer ~~thereof~~", applied
for in U.S.A., Great Britain,
Germany, France, Italy, Russia,
Japan, Argentina, Brazil:

I have explained the impracticability
of ~~this~~ this principle & Mr. Edison, have
told him I desire to withdraw the
applications, and have requested
that ~~he~~ be allowed to pay for the
costs on same. In debt, as per
memo #738.93 prepared by
Mr. Miller.

He has assented.

Will you therefore take steps
to "cancel" same at once?

2/19/13.

MMX.
File wrappers returned herewith.

February 22, 1913

Miss Laidlaw:-

POLIO 785 - HUTCHISON

Although this application is to be dropped, please keep it in the pending files until it becomes abandoned, inasmuch as it may be of interest in connection with the application on submarine cells to be filed in Mr. Hutchison's name.

H. L.

HL-JS

Noted in audit book

HL

Patent Series

Patent Application Files

Folio # 794 Kinetoscope

U.S. Patent #: 1204424

Primary Applicant: Gall, Adolph F

Date Executed: 10/9/1911

Mr. Wilson
Since we have done so much we better pay final fee on what is allowed & drop the other claims



Mr. Wilson
As I have not intended going to the Home P. K. since the 1st of August I will write to you by mail & will send you the original specification & drawings in return for the fee.
 September 11, 1916
C. H. Wilson

Mr. Wilson: AIA. FOLIO 794

I send you herewith the papers in allowed application Folio 794 relating to the Home P. K.

The claims which were allowed in this application cover only the film shifting and feeding mechanism shown in Figs. 6 and 11 to 15 of the drawings in the application.

The following four sets of claims, each set relating to a different feature of the machine, were canceled from the original specification in compliance with a requirement for Division by the Patent Office:-

1. Original claims 19 to 22 covering the means for tensioning and holding the film flat while passing projecting position, which means is shown in Figs. 9, 11, 20 and 21 of the drawings in the application.
2. Original claims 24 to 27 inclusive covering the film winding means, which means is shown in Figs. 7, 8, 18 and 19 of the drawings in the application.
3. Original claims 38 and 39 covering the lens mounting or ~~fixing~~ ^{focusing} device, which is shown in Figs. 3 and 4 of the drawings of the application and which comprises the parts numbered 38, 39, 77, 78, 79 and 88.
4. Claims 40 to 42 inclusive covering the lamp house mounting, which is shown in Figs. 2, 16 and 17 of the drawings of the application.

-2-

There are two questions to be decided: First, do you consider the invention covered by the allowed claims of the present application of sufficient importance to warrant taking out the patent? This will involve a payment of \$20.00 for the final Government fee. Second, do you wish a divisional application or applications filed on the subject matter covered by any of the four sets of claims enumerated above. In connection with the latter question, your attention is directed to the fact that should you decide that it is advisable to file a divisional application or applications, the same must be filed before the payment of the final fee on the allowed application, which fee is due October 17, 1916.

Please advise.

WH-JS

William A. Hardy

Patent Series

Patent Application Files

Folio # 801 Cement Kilns

Serial #: 655902

Primary Applicant: Edison, Thomas A

Date Executed: 10/16/1911

Folio No. 801Serial No. 655, 902

Applicant.

Thos. R. Edison

Address.

Title Acoustic filmsFiled Oct 21st 1911Examiner's Room No. 231

Assignee

Ass'g't Exec.

Recorded

Liber

Page

Patent No.

Issued

ACTIONS.

1	<u>Office Letter Nov. 25, 1911</u>	16
2	<u>Amended Nov. 22 - 1912</u>	17
3	<u>Rejected December 17-1912</u>	18
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14		29
15		30

Handwritten: Accepted by Mr. Edison's endorsement
Dec 9, 1913 HE

Stamp: **MAILED**

Handwritten: OK

FRANK L. DYER,
Counsel,
Orange, New Jersey.

Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON
a citizen of the United States, residing and having a Post Office address at
Llewellyn Park, West Orange, Essex County, New Jersey

prays that letters patent may be granted to him for the improvements in

URGENT KIENS

set forth in the annexed specification; and he hereby appoints Frank L. Dyer
(Registration No. 560), of Orange, New Jersey, his attorney, with full
power of substitution and revocation, to prosecute this application, to make
alterations and amendments therein, to receive the patent, and to transact all
business in the Patent Office connected therewith.

Thomas A. Edison

S P E C I F I C A T I O N

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, Essex County, New Jersey, have invented certain new and useful improvements in CEMENT KILNS, of which the following is a specification:-

My invention relates to cement kilns of the rotary type and has for its objects methods and means for improving and rendering more economical the operation of such kilns. Hitherto it has been the practice to make use of easily combustible materials, such as gas, oil, or bituminous coal, as fuel for heating such kilns. The fuel is projected into the lower end of the kiln usually by means of an air blast and ignited. When fuels of this character are used for this purpose, complete combustion takes place very rapidly, and the high temperature flame produced thereby extends only a limited distance into the kiln. As a result, the length of the clinkering zone is limited and trouble is experienced due to the formation of chalk rings or accumulations of raw material where the raw material enters the clinkering zone. By employing more difficultly combustible materials, or a mixture of more easily and more difficultly combustible materials, the heat in the kiln is extended over the entire area, and is somewhat reduced in intensity, and the clinkering zone is

considerably lengthened. I have found that these advantageous results may be obtained by using a mixture of pulverized anthracite and bituminous coals. When such a mixture is used, the bituminous coal ignites almost immediately upon entering the kiln and supplies sufficient heat to ignite the anthracite coal, which burns further up the kiln, forming a long continuous flame of high temperature, and the troubles due to chalk rings hitherto experienced are materially reduced. The clinkering zone is considerably lengthened, and its outline is less sharply defined than when using bituminous coal straight, and greater economy of operation is secured. For example, it has been found that by employing a mixture of 35% anthracite and 65% bituminous, about 10% more clinker may be burned with the same amount of coal than when using bituminous coal alone. Furthermore, by my invention, the lower and cheaper grades of anthracite coal may be utilized, and a considerable saving of expense thus effected. When using a mixture of anthracite and bituminous coals, I have found it desirable to employ an auxiliary oil burner in order to start the kiln and raise it to a clinkering temperature. Where a very large percentage of pulverized anthracite coal is mixed with a small percentage of bituminous coal, as for example, a mixture of 75% anthracite and 25% bituminous, the auxiliary oil burner is necessary not only when starting the kiln, but also in case the heat becomes reduced due to a stoppage or to variations in the operation of the kiln. My invention consists also in the provision of means for spreading the mixture of pulverized coal and air as it is projected into the kiln, so as to break up the column of coal and air in such a manner that the heat of the kiln can come into intimate contact with it

and cause the ignition of the pulverized coal to take place more readily. My improved spreading device is adjustable so that a greater or less distribution of the pulverized coal can be obtained, as is found necessary or desirable, thus changing the location of the heat in the kiln.

In order that my invention may be more readily understood, reference is had to the drawings accompanying and forming part of this specification, and in which -

Figure 1 is a side elevation partly in section showing a rotary kiln provided with fuel feeding apparatus equipped with my improved spreading device;

Figures 2 and 3 are side and plan views respectively of my improved spreading device applied to the end of a fuel supply tube or pipe;

Figure 4 is a side elevation partly in section showing a rotary kiln provided with fuel feeding apparatus and with an auxiliary oil burner; and

Figure 5 is a sectional view on the line 5-5 of Figure 4.

Referring to the drawings and particularly to Figures 1, 2 and 3 thereof, the lower ^{end} of a rotary kiln is shown at 1 opening into a chamber 2 which is provided with a chute 3 for directing the clinkered material into a cooling cylinder 4. The chamber 2 is provided with an opening 5 opposite the end of the rotary kiln. Through the opening 5 is extended the end of a fuel supply pipe 6. The fuel supply pipe 6 is supplied through a pipe 7 from a hopper 8 with pulverized fuel, preferably a mixture of pulverized anthracite and bituminous coals, and is supplied with air under pressure through a pipe 9 which is connected to any suitable means for supplying the com-

pressed air. The pipe 7 is provided with a valve 10, and the pipe 9 with a valve 11 for controlling the supply of pulverized fuel and air. Any other suitable means may be employed for this purpose. The end of the fuel supply pipe 6 which extends into the chamber 2 is provided with a device 12 for spreading the fuel which is projected from the pipe 6. The fuel spreading device 12 is illustrated more in detail in figures 2 and 3 and includes a sleeve 13 adjustably mounted upon the pipe 6. The sleeve 13 has projections or extensions 14 and 15 extending parallel to the pipe 6 and beyond the end thereof. Supported by the projections 14 and 15 is a cone-shaped portion 16 having its apex turned toward the opening in the end of the pipe 6 and located substantially in the line of the axis of the said pipe. The fuel spreading device 12 may be adjusted by moving the sleeve 13 along the pipe 6 so as to vary the distance between the cone-shaped portion and the end of the pipe and thereby control the distribution of the pulverized fuel which is projected from the fuel supply pipe 6.

In Figures 4 and 5 of the drawings, I have illustrated a somewhat modified form of fuel feeding apparatus of which an auxiliary oil burner forms a part. In this modification two fuel feeding pipes 21 and 22 are provided, having their ends extending into the chamber 2 through the opening 5. Each of these pipes is preferably provided with a fuel spreading device 12 similar to that illustrated in Figures 1, 2 and 3. The hopper 8 is provided with two connecting pipes 23 and 24 for supplying pulverized fuel to the fuel supply pipes 21 and 22 respectively. Air is supplied to the pipes 21 and 22 from any convenient source through the pipe 9. Valves 11' may be provided in the

pipes 21 and 22 and valves 10' in the pipes 23 and 24 for controlling the supply of pulverized fuel and air. An auxiliary oil burner 25, which may be conveniently located between the two pipes 21 and 22 is provided for starting the kiln and raising it to a clinkering heat, and also in case the heat becomes reduced, due to stoppage or variations in the operation of the kiln. The oil burner 25 is supplied with oil from any convenient source through the pipe 26 and the connection 27. The oil burner may be supplied with air through the pipe 9 and the flexible connection 28. A valve 29 is provided for controlling the oil supply and a valve 30 for controlling the supply of air to the oil burner. The oil burner 25 is detachably connected to the connection 27 and the connection 28 is made of flexible material in order to enable the oil burner to be removed from the opening 5 after the kiln has been started or when not otherwise needed.

Having now described my invention, what I claim and desire to protect by Letters Patent of the United States is as follows:-

- Amended 4/11/12*
1. A method of heating a rotary cement kiln, which consists in projecting into the kiln a pulverized mixture of easily and difficultly combustible fuels, and igniting the same, substantially as set forth.
 2. A method of heating a rotary cement kiln, which consists in projecting into the kiln a mixture of finely divided anthracite and bituminous coals, and igniting the same, substantially as set forth.
 3. A method of heating a rotary cement kiln, which

Cancelled 4-22-17
consists in projecting into the lower end of the kiln a stream composed of a mixture of air and pulverized easily and difficultly combustible fuels, and igniting the same, substantially as set forth.

4. A method of heating a rotary cement kiln, which consists in projecting into the lower end of the kiln a stream composed of a mixture of air and anthracite and bituminous coals, and igniting the same, substantially as set forth.

5. A method of heating a rotary cement kiln, which consists in projecting into the lower end of the kiln pulverized fuel, and spreading and igniting the same, substantially as set forth.

6. A method of heating a rotary cement kiln, which consists in projecting into the lower end of the kiln a pulverized mixture of easily and difficultly combustible fuels, and in spreading and igniting the same, substantially as set forth.

7. A method of heating a rotary cement kiln, which consists in projecting into the lower end of the kiln a mixture of pulverized anthracite and bituminous coals, and spreading and igniting the same, substantially as set forth.

8. In cement burning apparatus, the combination with a rotary kiln, of means for supplying pulverized fuel to the same, the said fuel supplying means being provided with means for spreading the fuel, substantially as described.

9. In cement burning apparatus, the combination with a rotary kiln, of means for supplying pulverized fuel to the same, the said fuel supplying means being provided with adjustable means for spreading the fuel, substantially as described.

10. Means for supplying pulverized fuel to a rotary cement kiln, including a fuel supply pipe and a fuel spreading device mounted thereon, substantially as described.

11. Means for supplying pulverized fuel to a rotary cement kiln, including a fuel supply pipe and a fuel spreading device adjustably mounted thereon, substantially as described.

12. Means for supplying pulverized fuel to a rotary cement kiln, including a fuel supply pipe and a fuel spreading device mounted in operative relation to the end of the said pipe, and having a tapered portion adjustable to and from the opening of the said pipe, substantially as described.

13. In cement burning apparatus, the combination with a rotary kiln, of means for heating the same, comprising means for projecting pulverized fuel into the kiln, and an auxiliary heating means, substantially as described.

14. In cement burning apparatus, the combination with a rotary kiln, of means for heating the same, comprising means for projecting pulverized fuel into the kiln, and an oil burner, substantially as described.

15. In cement burning apparatus, the combination with a rotary kiln, of means for heating the same, comprising means for projecting pulverized fuel into the kiln

and spreading the same, and an auxiliary heating means, substantially as described.

¹⁶
16. In cement burning apparatus, the combination with a rotary kiln, of means for heating the same, comprising adjustable means for projecting pulverized fuel into the kiln and spreading the same, and an auxiliary heating means, substantially as described.

¹⁷
17. In cement burning apparatus, the combination with a rotary kiln, of means for heating the same, comprising means for projecting pulverized fuel into the kiln and spreading the same, and an oil burner, substantially as described.

¹⁸
18. In cement burning apparatus, the combination with a rotary kiln, of means for heating the same, comprising adjustable means for projecting pulverized fuel into the kiln and spreading the same, and an oil burner, substantially as described.

¹⁹
19. In cement burning apparatus, the combination with a rotary kiln, of means for heating the same, comprising means for projecting pulverized fuel into the kiln and means for spreading the same, said means being independently adjustable, substantially as described.

This specification signed and witnessed this 16th day of October 1911

Thos. A. Edison

Witnesseth:

1. Harry Lanahan
2. Anna P. Keeler

Oath.

State of New Jersey } ss.,
County of Essex }

THOMAS A. EDISON, the above named
petitioner, being duly sworn, deposes and says that he is a citizen of the United
States, and a resident of
Llewellyn Park, West Orange, Essex County

New Jersey

that he verily believes himself to be the original, first and sole inventor of the
improvements in

CHERRY FILMS

described and claimed in the annexed specification; that he does not know and
does not believe that the same was ever known or used before his invention or
discovery thereof; or patented or described in any printed publication in the
United States of America or any foreign country before his invention or
discovery thereof, or more than two years prior to this application; or patented
in any country foreign to the United States on an application filed more than
twelve months prior to this application; or in public use or on sale in the
United States for more than two years prior to this application; and that no
application for patent upon said invention has been filed by him or his legal
representatives or assigns in any foreign country.

Thos. A. Edison

Sworn to and subscribed before me this 16th day of October 1911

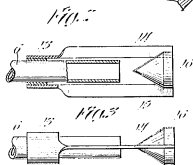
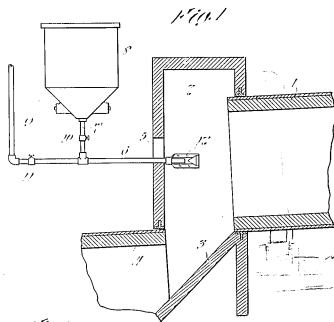
Anna P. Keeler

[Seal]

Notary Public.

801

650,902



Witnesses:

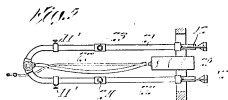
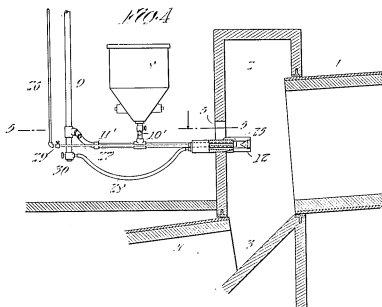
Frank Davis
Henry L. Latham

Inventor:

James H. Latham
by Frank C. Latham
his Atty.

861

Nov. 1902



Witnesses:

Paul D. Lewis

Harry L. Latham

Inventor:

Thomas A. Edison

By Wm. H. H. H. H.

Nov. 1902.

Div. 19 Room 236

RRC

2-200

Paper No. 2 REJ.

Address only
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON

Nov. 25, 1911

Thomas A. Edison,

Care Frank L. Dyer,

Orange, N. J.



Please find below a communication from the *EXAMINER* in charge of your application.
for Cement Kilns, filed Oct. 21, 1911, Serial No. 655,902.

E. B. Willard

Commissioner of Patents.

The claims in this case cover two distinct inventions and
division is accordingly required.

Claims 1 to 7, inclusive, cover a method for burning pulver-
ized fuel and the remaining claims cover a fuel feeding apparatus.

The following patents are cited:

Carpenter, 691,336	Jan. 14, 1902.	Class 110-41;
Zell, 942,896	Dec. 7, 1909.	Class 110-104;
Bausler, 930,727	Aug. 2, 1909.	"
Weaver, 739,131	Dec. 1, 1903.	"

- X Carpenter 691,336 discloses use of mixture
of pulverized anthracite and bituminous
coal + adjustable spreader
- X Dasher 930,127 shows adjustable spreader
- X Zell 942,696 shows adjustable spreader
- X Linkard 969,169 - shows combined gas
and pulverized fuel burner

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison)

CEMENT KILNS)

Filed October 21, 1911)

Serial No. 655,902)

Room No. 236

HONORABLE COMMISSIONER OF PATENTS.

S I R :

In response to the Office action of November 25th, 1911, please amend the above entitled case as follows:-

Cancel claims 1 to 7 inclusive and renumber the remaining claims as 1 to 12 inclusive.

R E M A R K S

Claims 1 to 7 have been canceled in response to the requirement of division. Applicant reserves the right to file a divisional application covering the subject matter of the canceled claims.

Action on the merits of the claims now in the case is requested.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Alger

His Attorney

Orange, New Jersey

November 22, 1912

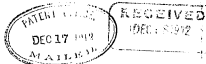
Admonitory
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON December 17, 1912.

Thomas A. Edison,
Care Frank L. Dyer,
Orange, N. J.



Please find below a communication from the EXAMINER in charge of your application.

for Cement Kilns, filed Oct. 21, 1911, Serial No. 656,902.

4-5431

E. B. Moore

Commissioner of Patents.

This case has been considered as amended November 23,
1912.

Since the part 1 is referred to as a rotary kiln some
means should be shown for rotating the same.

Claims 1-6 inclusive, 8, 9 and 12 are rejected on the
art of record, particularly Zell.

Claims 7, 10 and 11 are rejected in view of either

Linhard,	969,169,	Sept. 6, 1910,	Class 110-104;	or
Schutz,	836,146,	Nov. 20, 1906,	" 110-28.	

See also

Larsen,	824,728,	July 3, 1906,	Class 110-104;
Chapman,	329,724,	Nov. 3, 1895,	" 158-113;
Hangelandorf,	977,153,	Nov. 29, 1910,	" 110-104;
Wilson et al.,	438,672,	Oct. 21, 1890,	" 110-22;
Leede,	292,256,	Jan. 22, 1884,	" 110-22.

THREE MARKS

 Thomas A. Edison

The Edison Portland Cement Co.

THOMAS A. EDISON, CHAIRMAN OF BOARD
 W. M. MALLORY, PRESIDENT
 J. LEITCH THOMPSON, VICE-PRESIDENT
 H. P. MILLER, TREASURER
 WM. M. HENGE, SECRETARY

Telegraph, Freight and Passenger Station, NEW VILLAGE, N. J.

P. O. ADDRESS STEWARTSVILLE, N. J.

SALES OFFICES:
 PHILADELPHIA, Pa., ARCADE BUILDING
 NEW YORK, N. Y., ST. JAMES BUILDING
 BOSTON, MASS., UNION BUILDING
 CHICAGO, ILL., POST OFFICE SQUARE Bldg.
 ST. LOUIS, MO., NATIONAL BANK BUILDING

July 24th, 1913

Mr. Thomas A. Edison,
 Edison Laboratory,

Orange, N. J.

Dear Sir:

I have a letter from the Legal Department asking for information in regard to the Spreader Gun, burning oil in the Kiln, &c., and the following are present conditions. I thought you might be able to describe to the Legal Department the type of patent which would be most advantageous.

After reading this, will you please turn it over to the Legal Department with such comments as seem to you necessary.

In burning anthracite coal mixed with gas coal we have found that with a mixture of 35% anthracite and 65% bituminous, we are able to burn about 10% more clinker with the same amount of coal than we could when using the gas coal straight. We attribute this to the fact that the heat in the kiln is extended over a longer area and is somewhat less in intensity than with the gas coal straight, due to the fact that the gas coal ignites almost immediately upon entering the kiln and supplies sufficient heat to ignite the anthracite, which burns further up the kiln making a long continuous

Mr. Edison.

-2-

7-24-11.

flame of high temperature. By this means we have discovered that there is very much less trouble from chalk rings or accumulations of raw material partially cindered as the raw material enters the clinkering zone, and the clinker zone is considerably lengthened and its outline less sharply defined than when using gas coal straight.

When using this mixture of anthracite and gas coal, it is desirable to have an auxilliary oil burner in order to start the kiln and get it into a clinkering heat, as the mixture burns very slowly when the kiln is cold, and it is very difficult to get the heat without the addition of oil.

When burning a larger percentage of pulverized anthracite with bituminous, say 75% anthracite and 25% bituminous or gas, the auxilliary oil burner is necessary, not only when starting the kiln, but also in case the heat becomes reduced due to stoppage of the kiln or variations in the operations.

It has also been found desirable and necessary with a higher percentage of anthracite, say from 50% up, to use a Spreader on the pipe injecting the mixture of pulverized coal and air into the kiln. This Spreader breaks up the column of coal and air so that the heat of the kiln can come into intimate contact with it and cause the ignition of the pulverized coal more rapidly.

Sketch of this Spreader is enclosed, and by adjusting the Spreader closer or further from the end of the pipe, greater

Mr. Edison.

-3-

7-24-11.

or less distribution of the pulverized coal can be obtained,
as is found necessary or desirable, thus changing the location
of the heat in the kiln.

So far our best results have been obtained by burning
a mixture of 35% anthracite and 65% gas coal.

By this means we can utilize the lower and cheaper
grades of anthracite coal, and this effects considerable saving.
It would seem if we could pulverize anthracite sufficiently
fine, we would be able to burn it straight without any gas coal.

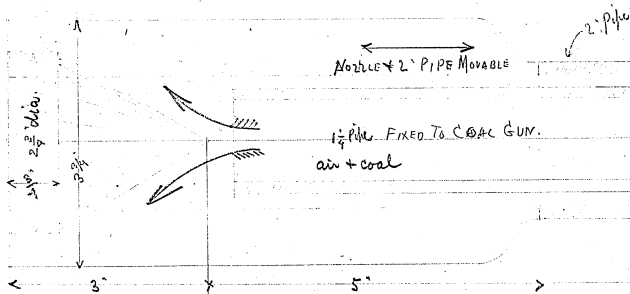
Yours very truly,

W. H. Mason

WHM-RR.

Enc. 1.

Rec'd by Lewis 7/26/41.
 telephoned to cement plant
 for more data 7/26/41.



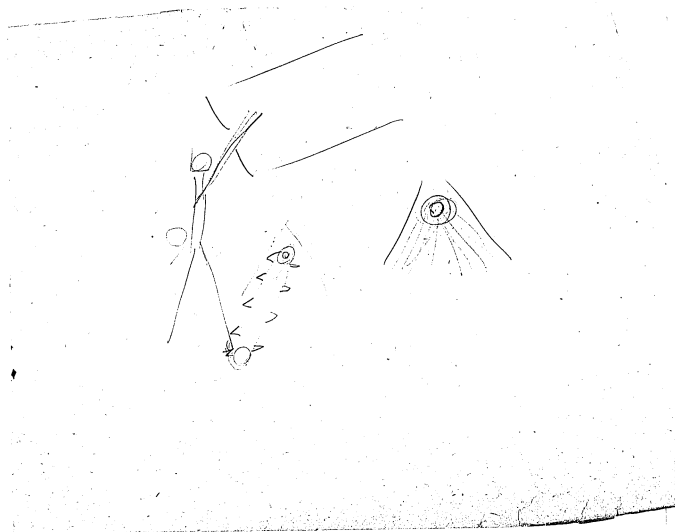
1 1/4" IN. FIXED TO COAL GUN.
 air + coal

Coal Gun Nozzle, Cone Div.

Edison Portland Cement Co.

PULL SIZE. HANDLE H.J.

7-29-11



24th

Care Sun for Census Bureau

Presby. Ch. B'n.

July 27 1911

FORM 474

TRADE MARK
Thomas A. Edison.

The Edison Portland Cement Co.

THOMAS A. EDISON, CHAIRMAN OF BOARD
W. B. MALLORY, PRESIDENT
J. LEWIS THOMPSON, VICE-PRESIDENT
H. P. MILLER, TREASURER
Wm. M. HOSKIN, SECRETARY

Telegraph, Freight and Passenger Station, NEW VILLAGE, N. J.

P. O. ADDRESS, STEWARTSVILLE, N. J.

SALES OFFICES:
PHILADELPHIA, PA.: SEWELL BUILDING
NEW YORK, N. Y.: 41 JONES BUILDING
NEWARK, N. J.: UNION BUILDING
BOSTON, MASS.: POST OFFICE BUILDING
SAVANNAH, GA.: NATIONAL BANK BUILDING

July 24, 1911.

Legal Department,

Edison Laboratory,

Orange, E. J.

Mr. Frank D. Lewis.

Dear Sir:

Your letter of the 21st inst. to Mr. Mallory has been referred to me. I beg to advise that I have written to Mr. Edison giving him facts and a sketch of this Gun.

I do not just know what he wants to cover in this patent, and I thought it best to give him the opportunity to go over my letter and forward it to you with his comments.

Hoping this is satisfactory, I am

Yours very truly,

W. H. M. M.

WEM-RR.

P

Patent Series
Patent Application Files

Folio # 806 Method of Forming Sound-Record Molds

U.S. Patent #: 1097985

Primary Applicant: Moore, Sherwood T

Date Executed: 11/29/1911

Legal Dept.
Patent =

The usual practice of making
working matrices of phonograph
disc records is to take,
the electrolytic Copper disk
after detaching from the wax
record, & solder it to a
thick metallic plate.
The result of this is that the
face of the record is not a
plane surface but consists of
a wavy surface ^{unusable in the matrix work} not satisfactory
to the eye. Except when light
is reflected at a certain
angle from the smooth part
of the record, the eye then

Read from
Patent to Edison
May 4, 1911.
J. J. Chalmers

2 Legal D

perceives that the plate does not
have a perfectly plane surface
but is undulatory. These
undulations ~~then~~ ^{point} produce
sounds, as the diaphragm of
the reproducer of the up-
down style of record must
follow these undulations.
They are due to the rough
surface of the metal deposited
electrolytically, & also
of the tool marks on the
metallic disc used for
the backing in conjunction
to the unequal flow of the
solder under pressure & also
of air trapped -

It is very essential in

3 Legal Dept

those discs which employ the up & down method of recording that the whole face of the disc should be free of undulations of this minute character & be a perfectly plane surface hence the only sounds produced will be those due to the sound record itself -

I produce a plane surface free of the minute undulations by securing the electrolytic record against a face plate by a soft adhesive cement which securely fastens & also prevents

4 Legal Dept

scratching the record surface. This plate is connected to a buffer & the back of the record is turned off by a ~~diamond tool~~ tool having a natural diamond for the cutting edge. The feed is made very fine so that the amount of pressure on the diamond is small & the thin disc is not subjected to any strains that tends to scratch ~~the surface~~ it. The thick metallic plate to which the record disc is to be secured is also turned off with a diamond tool.

5. Legal Dept

at the Edge of this backing plate is turned a piece $\frac{1}{4}$ wide & about .004 ~~deep~~ deep at the center there is turned an area 2" in diameter also .004 deep. These two recesses are filled with solder & wiped off flush with the general surfaces -

Next the thin disc having the sound record is ~~is~~ coated around the Edge & Center (corresponding to the recessed part of the backing up tank) with solder & wiped almost free of the same

6. Legal Dept

The two are placed together & pressed in a press through discs of blotting paper & while under pressure brought up to a temperature where the solder melts around the other edge a soldering iron is run to insure the ~~whole~~ melting evenly - The whole is allowed to cool -

The matrix where the record is ^{formed of two discs} now pressed ~~both~~ together the record containing area presses on the backing where there is no solder

7 Leg Dept

& as the 2 surfaces are
turned to perfect planes
by the diamond, the
records from such
matrices are plane faced
& do not contain
minute undulations

See Moore for full
Explanations

Claim a disc record
with plane face
free from minute undulations
as new article says -

+ All the various things
such as use of a
diamond tool -

1002

Received from Mrs. Edison - Nov 22, 1911

The
Read from N. L. Nov. 22, 1911.
J. B.

Patent sewing the
stated master to
the backing by recess
+ solder - Maps
will show you

Appen filed
J. B.

Patent Series
Patent Application Files

Folio # 813 Alternating-Current Rectifier

U.S. Patent #: 1221981

Primary Applicant: Edison, Thomas A

Date Executed: 12/12/1911

Lawrence
September 29, 1916
rejection of
but cannot appeal
Mr. Edison:-

FOLIO 813 - application of Thomas A. Edison for
Alternating Current Rectifiers, filed Dec-20, 1911,
Serial No. 668,611

Claims 6 to 11 inclusive of this application are under final rejection. The invention covered by these claims is the use of a carbon contact on the armature in a rectifier. The finally rejected claims read as follows:-

6. In an alternating current rectifier, an elongated armature of magnetic material provided with a carbon contact, substantially as described.

7. In an alternating current rectifier, an armature, a carbon contact carried thereby, and means for vibrating the armature in synchronism with the current to be rectified, substantially as described.

8. In an alternating current rectifier, an elongated soft iron armature pivotally mounted at one end thereof and provided with a carbon contact member at the other end, substantially as described.

9. In an alternating current rectifier, a stationary contact member having a large contact surface, and a plurality of carbon contacts adapted to co-operate therewith by movement into and out of contact therewith, substantially as described.

10. In an alternating current rectifier, the combination of a carbon contact, and means for vibrating the same in synchronism with the alternating current to be rectified, substantially as described.

11. In an alternating current rectifier, a stationary contact member and a contact member adapted to co-operate therewith and to be moved into and out of operative relation thereto in synchronism with the alternating current to be rectified, one of said contacts being of carbon, substantially as described.

The references upon which the claims are rejected are British patent 12508 of 1901 and U.S. patent to Russell 755,048. The British patent shows a rectifier of substantially the same type as the rectifier shown in this application. See particularly Fig. 2 of the British patent. In the patent to Russell, an elongated conducting member 8^b is pivotally mounted at one end and carries a carbon pencil serving as a contact at the other end, adapted to contact electrically with two fixed contacts 12 and 13. Means is provided for oscillating the elongated member from one contact position to the other. The particular use of the Russell device is for establishing circuit connections alternately through lamps used in an advertising device.

The Examiner's position is substantially that there is no invention in providing the vibratory member d shown in Fig. 2 of the British patent with a carbon contact such as is used in the Russell patent. The Examiner states his position as follows:-

"The British patent 12,508 of 1901 discloses an elongated armature of magnetic material asynchronously driven and * * * the substitution on such an armature of a carbon contact for a metallic one would be obvious, in view of the analogous use of such a carbon contact by Russell and the extreme commonness of carbon contacts on all kinds of circuit make and break mechanism."

We believe that the Examiner's position is correct and that the claims are not patentable.

Will you kindly advise me whether you wish to take an

-3-

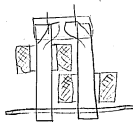
appeal from this rejection to the Board of Examiners-in-Chief, or whether you are willing to have us cancel these rejected claims.

Henry Canahan

HL-JS

Edison

Calc for each armature



Armatures in series



Patent Series
Patent Application Files

Folio # 810 Method for Producing Tablets for Sound-Records

U.S. Patent #: 1146413

Primary Applicant: Edison, Thomas A

Date Executed: 12/19/1911

Received from Mr. Edison, Nov 22, 1911

HL
Rec'd from H. R. Nov. 22, 1911,
St. B.

Patent filling the
powder into crude
blank before pressing
by using Rubber &
an Aiken will
explain —

Rec'd by HL
Nov. 22, 1911

Patent Series

Patent Application Files

Folio # 812 Production of Finely-Divided Metals

U.S. Patent #: 1275232

Primary Applicant: Edison, Thomas A

Date Executed: 12/20/1911

Received from Mr. Edison - Nov 22, 1911

HL

Method of preparing extremely finely divided metals which are non pyrophoric —

Finely divided iron when removed from the oxide
by hydrogen takes fire when exposed to the
air. This has hitherto been prevented by the
use of water. Mr. Edison has found that the
spontaneous combustion is due to the presence
of hydrogen in the iron, and that the metal
may be rendered non-pyrophoric by forcing
nitrogen through it and displacing the hydrogen.
The method may be applied to, iron, zinc, lead,
tin, copper, cobalt, cadmium, tungsten,
molybdenum and other metals whose oxides
can be reduced by hydrogen.

Proposed New Claims in Application of Thomas A. Edison,
Serial No. 667,366, filed December 22, 1911, en-
titled Production of Finely Divided Metals

12. A new composition of matter consisting of electrolytically active iron reduced in finely divided condition and rendered non-pyrophoric without change in its physical structure, substantially as described.

13. A new composition of matter consisting of electrolytically active iron reduced in finely divided condition and rendered non-pyrophoric without change in its physical structure or its chemical properties, substantially as described.

14. A new composition of matter consisting of electrolytically active iron reduced in finely divided condition and rendered non-pyrophoric without substantial change in its porosity, substantially as described.

*Make some mention
in "Remarks" as to finely divided
substance. Go when you find
means of producing fine, or smaller
in size - also less porous
If not electrolytically active, say
May as for as you can.*

I.L. Bell
See 11 Bell on Chem
phenomena of the
blast furnace
Mr. Edison
Nitrogen can
not gas
be used, CO₂
nit.
This does work Melanic work
reduces CO₂ to CO at high temp,
it can be only done with

There is a mistake with the claims

See me

December 22, 1914

Iron is not only free from hydrides and hydroxides but also free from oxides. See spec. p. 3 d. 9-12. Should it be amended to read: Iron is free from hydrides and hydroxides?

RE AMENDMENT OF FOLIO 812

In your application for the production of non-pyrophoric finely divided iron, the following claim has been allowed:-

11. A new composition of matter consisting of non-pyrophoric finely divided iron free from (hydrides or hydroxides), substantially as described.

By your amendment

All of the other claims are under rejection. The principal reference is the patent to Kayser No. 1,001,279, in which non-pyrophoric finely divided nickel is produced by reducing a nickel compound with hydrogen at a high temperature and thereafter displacing the hydrogen with carbonic acid gas. In your invention, iron is treated in a similar way but the hydrogen is displaced by nitrogen. Furthermore, in your invention the reduced mass is permitted to cool before the hydrogen is displaced by nitrogen, whereas in Kayser the reduced mass is maintained at a high temperature while the hydrogen is being driven out by the carbonic acid gas.

It will aid me in the further prosecution of your application if you will give me information on the following points:-

In your application it is stated that the hydrogen may be displaced by passing nitrogen or some other suitable inert gas through the reduced mass. Is carbonic acid gas a suitable inert gas for this purpose?

What advantage is there in using nitrogen instead of carbonic acid gas in treating iron?

What advantage is there in permitting the reduced mass of iron to cool before displacing the hydrogen by the nitrogen?

(2)

There are at present claims in the case which are not limited to iron as the metal treated and not limited to the use of nitrogen as a gas for displacing the hydrogen. In view of the Kayser patent, the claims should probably be so limited. Do you think we should endeavor to secure the allowance of a claim such as claim 12, which differs from claim 11 by reciting that the iron is electrolytically active, or ~~would not~~ ^{is all} iron of the character described in claim 11, that is to say, non-pyrophoric finely divided and free from hydrates or hydroxides ~~be~~ electrolytically active?

Henry Lawson

HL-JS

yes

[ON BACK OF PREVIOUS DOCUMENT]

Chemical Phenomena of Iron Smelting

J. L. Bell -

*Note
Jewell*

January 13, 1915

Mr. Edison:-

Kindly advise me whether the attached proposed amendment and argument in your application for the preparation of non-pyrophoric iron meets with your approval. I have talked with Mr. Aylsworth about this application and have also consulted Bell's Book on Iron Smelting recommended by you. According to Bell, see page 94, carbon dioxide has substantially no effect on nickel at the temperature of melting zinc, that is to say, about 417° C. At a low red heat there would be a slight oxidation and at a bright red heat considerable oxidation. Apparently, in the process of ~~the~~ *Kayser* there would be some oxidation, but of this I am not sure. Claim 8 covering non-pyrophoric finely divided iron free from hydrates or hydroxides has been allowed, and in accordance with your suggestion a claim is now presented covering non-pyrophoric finely divided iron free from oxygen compounds. The other claims for which allowance is now asked are method claims, the broadest of which are 1 and 2, claim 1 relating to reducing any metal from a suitable compound by hydrogen and displacing the hydrogen by nitrogen, and claim 2 relating to reducing iron by hydrogen and displacing the hydrogen by any inert gas.

I would not trouble you about this matter if it were not for the obscure nature of the phenomena involved in your invention and in the references cited.

Henry Pausan

HL-JS

This sheet was rewritten before filing.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

PRODUCTION OF FLASHY DIVIDED METALS

Room No. 175

Filed December 22, 1911

Serial No. 667,366

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of January 26, 1914, please amend the above entitled case as follows:-

Page 3, line 10, before "free" insert - not only free from oxides but is also - .

Cancel claims 1, 2 and 3 and renumber claims 4 to 10 inclusive as 1 to 7 inclusive.

Renumber claim 11 as 8 and rewrite the same as follows:-

8. A new composition of matter consisting of non-pyrophoric finely-divided iron free from hydrates or hydroxides, substantially as described. -

Cancel claim 12.

Add the following claim: -

9. A new composition of matter consisting of non-pyrophoric finely-divided iron free from oxygen compounds, substantially as described. -

Why not say free from Oxygen.

or

or Oxygen Compounds.

Because this would unnecessarily limit the claims.

Mr Hardy Sept 24

If it is reduced at a higher temperature

January 24, 1917

Mr. Edison:-

RE AMENDMENT OF PATENT 113

In your application for the production of non-pyrophoric also finely divided iron, claims 1 to 7 inclusive, covering the process, have been allowed.

This application contains the following claims covering the product resulting from the process described in the application:-

8. A new composition of matter consisting of non-pyrophoric electrolytically-active iron reduced in finely divided condition and free from hydrates or hydroxides, substantially as described.
9. Non-pyrophoric electrolytically-active iron, reduced in finely divided condition and having its particles free from oxygen compounds of iron, substantially as described.
10. Finely divided iron reduced by hydrogen from a finely divided compound or compounds of iron and rendered non-pyrophoric by displacement of the hydrogen from the reduced mass by an inert gas, substantially as described.
11. Non-pyrophoric finely divided iron having substantially the same physical and electro-chemical properties as non-pyrophoric finely divided iron produced by first reducing iron by hydrogen from a suitable compound or compounds and then displacing the hydrogen by an inert gas, substantially as described.

All the above product claims stand rejected on the disclosure in lines 20 to 21 inclusive, page 31 of a work by Roscoe and Schorlemmer entitled "A Treatise on Chemistry", reading as follows:-

"In order to obtain chemically pure iron the oxide, or oxalate, may be heated in a current of hydrogen at the lowest possible temperature; the metal is obtained by this process as a black powder, which oxidizes and becomes

incandescent in the air, but if the reduction be carried on at a higher temperature, the powdered iron is non-pyrophoric."

The process of obtaining the non-pyrophoric iron as described in your application is as follows:- Finely divided oxide of iron, for example, ferric oxide, is subjected to the reducing action of hydrogen at a suitable high temperature, for example, say 1000 or 1200 degrees F. After the reduction, the reduced mass is allowed to cool slowly in an atmosphere of hydrogen to normal temperature after which a current of nitrogen or other inert gas is passed through the reduced mass so as to displace the hydrogen, care being taken to prevent the access of air or oxygen to the reduced mass.

Will you kindly advise me whether the non-pyrophoric finely divided iron produced by the method disclosed in your application is different physically, electrochemically, or otherwise from the iron produced in the manner described in the matter quoted above from the work of Roscoe and Schorlemmer. A print of page 31 of the work of Roscoe and Schorlemmer is attached hereto.

WH-JS

William C. Hardy.

Mr. Harry
Legal Dept

I want to appeal = once before I
Explained all this to you the difference
Come to me & I will explain
January 15, 1918
Explaining it - I thought I made it
plain. If you come to W when I will go too
I am sending you herewith our copy of the above appli-

Mr. Edison:-

cation, Serial No. 667,366, filed December 22, 1911, entitled
Production of Finely Divided Metals.
with you & explain to you

This application relates particularly to the production
of non-pyrophoric finely divided iron, and contains seven claims
covering the process which have been allowed.

The application also contains the following claims
covering the product:-

8. A new composition of matter consisting of non-pyrophoric electrolytically-active iron reduced in finely divided highly porous condition and free from hydrates or hydroxides, substantially as described.
9. Non-pyrophoric electrolytically-active iron, reduced in finely divided highly porous condition and having its particles free from oxygen compounds of iron, substantially as described.
10. Finely divided highly porous iron reduced by hydrogen from a finely divided compound or compounds of iron and rendered non-pyrophoric by displacement of the hydrogen from the reduced mass by an inert gas, substantially as described.
11. Non-pyrophoric finely divided highly porous iron having substantially the same physical and electrochemical properties as non-pyrophoric finely divided iron produced by first reducing iron by hydrogen from a suitable compound or compounds and then displacing the hydrogen by an inert gas, substantially as described.

All of the above product claims stand finally rejected on the disclosure in lines 16 to 21 inclusive, page 31 of the work by Roscoe and Schorlemmer entitled "A Treatise on Chemistry", these lines reading as follows:-

"In order to obtain chemically pure iron, the oxide or oxalate may be heated in a current of hydrogen at the lowest possible temperature; the metal is obtained by this process as a black powder, which oxidizes and becomes incandescent in the air, but if the reduction be carried on at a higher temperature the powdered iron is not pyrophoric."

The above claims for the product also stand rejected on the ground that they attempt to cover the product by process steps.

Kindly advise whether you wish an appeal taken from the action of the Examiner in finally rejecting these product claims.

In case you wish ^{fully} such an appeal taken, I would appreciate it if you would indicate wherein the non-pyrophoric iron produced as described in the application differs from the non-pyrophoric iron produced in accordance with the description contained in the work "A Treatise on Chemistry" referred to above. It would also be of assistance to me if you would authorize Mr. John Miller or some one else of the Chemical Works to disclose to me exactly how the iron used in the storage batteries is made.

A print of page 31 of the work of Roscoe and Schorlemmer referred to is attached hereto.

W. M. C. Hardy

*I must leave for
Request before
you come -
Stick to it &
appeal -*
January 22, 1918

Mr. Edison:-

I expect to be in Washington on the 30th of this month to attend a hearing before the Commissioner of Patents. Accordingly, if it is possible for you to see the Examiner with reference to your application relating to the production of non-pyrophoric iron referred to in the attached memorandum, at any time between one and four thirty P.M. on that date, I will make proper arrangements for a conference.

WH-JS

*Wm. G. Hardy
but don't push it
till 7:00 am
to Washington
probably 2 1/2
minutes -*

Thos. A. Edison
c/o J. J. Reutter
Naval Annex,
Washington, D. C.

Arrive Washington nine-fifteen
tonight. Will endeavor to see you
tonight to arrange for conference
with Examiner tomorrow morning
on non-pyrophoric iron application.

ES&Co Control

Wm. A. Hardy.

EDISON STORAGE BATTERY CO.

ORANGE, N.J.

EDISON CHEMICAL WORKS DIVISION

SILVER LAKE, N.J.

Jan. 28, 1918.

Mr. Hardy,
Legal Department,
Edison Storage Battery Co.,
Orange, N. J.

Dear Mr. Hardy:

We are submitting you two samples of experiments made up in the following manner;

Experiment No. 3009.

Took 100 gms of regular red iron and reduced, *in hydrogen*
at a temperature of 1100°F.

Time for reduction - 1 1/2 hours.
Both inlet and out-let valves on the pot were closed and the pot was connected to Hydrogen line and cooled to room temperature. Time - 14 hours.
Both valves were again closed and the pot was connected to line supplying Nitrogen. This was done to displace the Hydrogen.

Nitrogen was obtained by passing air through set of purifiers composed of sulfuric acid, Ferrous Sulphate and Alkaline solution of Pyrogallie acid.

Nitrogen was passed through pot for 1 1/2 hours.
The pot was then opened, the iron was a good gray color, all reduced, soft and crushed easily under finger pressure.

Experiment No. 3010.

Took 100 gms of regular red iron and reduced, *in hydrogen*
at a temperature of 1600°F.

Time for reduction - 1 1/2 hours.
Both inlet and outlet valves on the pot were closed and the pot was then connected to Hydrogen line and cooled to room temp. Time - 2 hours.

The pot was then opened and the iron was hard and slightly oxidized, and combined in one lump, and would not break up under finger pressure.

CPH-G.

Supt.

Patent Series
Patent Application Files

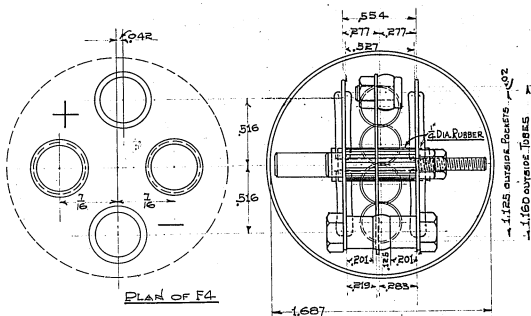
Folio # 818 Storage Battery

U.S. Patent #: 1073107

Primary Applicant: Edison, Thomas A

Date Executed: 12/30/1911

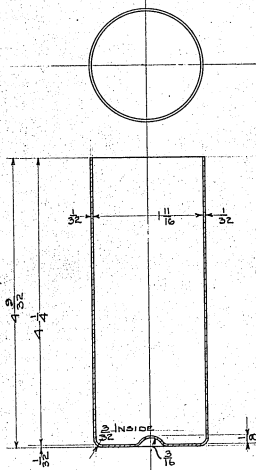
CELL NO F4



FOR ELEVATION DIMENSIONS,
LEVEL OF ELECTROLYTE ETC.
SEE DRWG NO. F14.

Jan. W. Knablock 10-4-1911

PART No. F307



CAN. FOR F4 CELL

C.R. STEEL NI. PLATED & ANNEALED

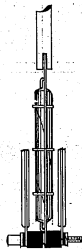
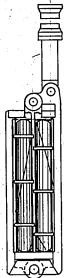
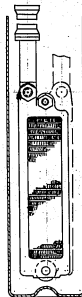
Handwritten:
240
10/10/11

FE

181



NEGATIVE GROUP

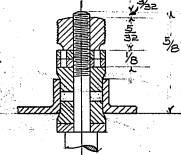
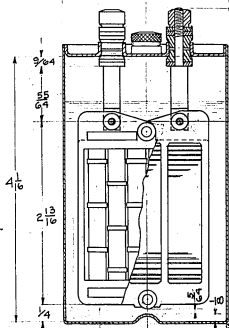
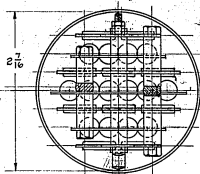
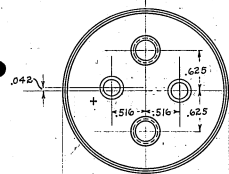


POSITIVE GROUP

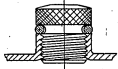
Feb 10-20-11

PART No. F14

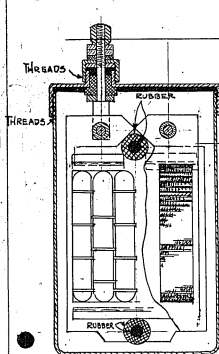
CELL COMPLETE



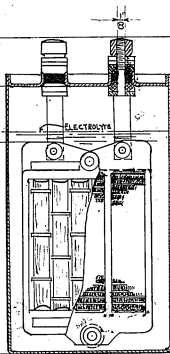
SECTION THROUGH POLES
DOUBLE SIZE



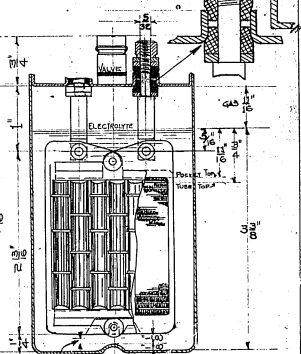
SECTION THROUGH FILLING CAP
DOUBLE SIZE



No. 1



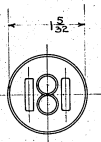
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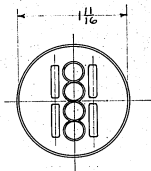
No. 3

TO DROP
BEFORE RUBBER
TOUCHES BOTTOM.

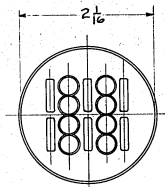




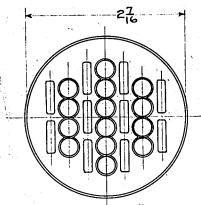
F2 CELL
1.1 AMP. HOUR



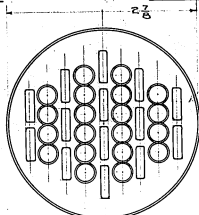
F4 CELL
2.25 AMP. HOUR



F8 CELL
4.4 AMP. HOUR



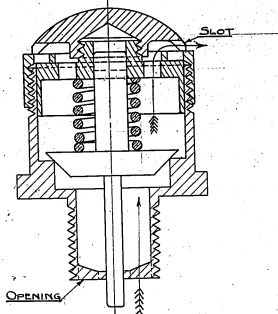
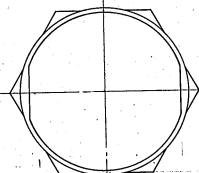
F14 CELL
7.75 AMP. HOUR



F20 CELL
11 AMP. HOUR

No Models
Have Been
Made Of
This Cell

VALVE NO. K106



Patent Series
Patent Application Files

Folio # 814 Method of Recording Sounds

Serial #: 669868

Primary Applicant: Edison, Thomas A

Date Executed: 1/2/1912

Folio No. 814

Serial No. 669, 868

Applicant.

Address.

Thomas A. Edison

Title Method of Recording Sounds

Filed *Nov. 6th*, 1912

Assignee

Ass'g't Exec. _____ Recorded _____ Liber _____ Page _____

Patent No. _____ Issued _____

ACTIONS.

- | | | |
|----|-------------------------------|----|
| 1 | Revised Feb. 14-1912 | 10 |
| 2 | Amended Jan. 23-1913 | 17 |
| 3 | Revised Feb. 26-1913 | 18 |
| 4 | Amended Feb. '3-1914 | 19 |
| 5 | Finally revised March 14-1914 | 20 |
| 6 | | 21 |
| 7 | | 22 |
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| 14 | | 29 |
| 15 | | 30 |
- Paul*
Lawrence

FRANK L. DYER,

Counsel.

Orange, New Jersey.

Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON,
a citizen of the United States, residing and having a Post Office address at
Llewellyn Park, West Orange, County of Essex, and State of New
Jersey,

prays that letters patent may be granted to him for the improvements in

- METHOD OF RECORDING SOUNDS-

set forth in the annexed specification; and he hereby appoints Frank L. Dyer
(Registration No. 560), of Orange, New Jersey, his attorney, with full
power of substitution and revocation, to prosecute this application, to make
alterations and amendments therein, to receive the patent, and to transact all
business in the Patent Office connected therewith.

Thos. A. Edison

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States, and a resident of Llewellyn Park, West Orange, in the County of Essex and State of New Jersey, have invented certain new and useful improvements in METHOD OF RECORDING SOUNDS of which the following is a description:

My invention relates to methods of recording sound, more particularly when the source of the sound is at a considerable distance from the recording instrument. The object of my invention is to provide an improved method of this character whereby sounds may be faithfully recorded and a record having good acoustic qualities obtained.

When the sound from a given source is recorded in a room, as has heretofore been customary, the walls of the room reflect the sound waves and these reflected waves after one or more reflections enter the horn of the recording instrument together with the true waves direct from the sound source, all of these waves being greatly amplified by the recording horn. As the reflected sound waves reach the recording instrument later than the direct waves, an objectionable sound interference is caused; so that when a record made in this way is reproduced, the reproduced sound is found not only to be different from that emanating directly from the original sound source, but also to be less agreeable and harmonious. When the source of sound is in close proximity to the horn of the recording instrument, this depreciation in quality is not very noticeable, but when it is at a considerable distance from the

horn, as is necessarily the case with the different instruments of an orchestra which is rendering the selection to be recorded, the depreciation in quality is considerable, this depreciation in many instances being so great that the reproduction of the sound as recorded for some of the instruments is very disagreeable.

I have discovered that the recording of these reflected waves is the cause of the difference in quality between the sound as heard by the ear directly from the original sound source and as heard from the ordinary phonograph record; and my invention accordingly contemplates the elimination of the reflected sounds or sound waves from the record. In accordance with my invention, I record the sound at a considerable distance from any means tending to reflect the sound into the horn of the recording instrument. This may be done, in the open air or, if desired, ^{with the aid of sound reflecting instrument} in a canvas tent. ^{or housing of fabric fabric such as canvas or paper} In the latter case, the earth which ^{entire walls and roof} constitutes the floor of the tent, as well as the walls of the tent, tend to dissipate rather than reflect the sound waves impinging on the same, so that none of these waves are recorded and it is possible to obtain a record of a high degree of accuracy and of good quality.

It is to be understood that I do not limit myself to the recording of the sounds in a tent, but that my invention contemplates generally the recording of sounds at a distance from any means tending to reflect the sound waves from the original source into the horn or receiver of the recording instrument.

Having now described my invention, what I claim as new and desire to protect by Letters Patent is as follows:

- amended 1/20/18*
1. The process of making original sound records which consists in locating the source of sound remote from

sound reflecting surfaces, causing the emission of the sounds to be recorded, and making a record thereof, substantially as described.

¹ ~~with the source of sound at a considerable distance from the recording instrument~~
2. The process of making original sound records which consists in locating the source of sound and the recording instrument remote from surfaces ^{designed to reflect} capable of reflecting the sound from the source into the recording instrument, causing the emission of the sounds to be recorded, and making a record thereof, substantially as described.

² ~~with the source of sound at a considerable distance from the recording instrument~~
3. The process of making original sound records which consists in locating the source of sound in a tent free from sound reflecting surfaces, causing the emission of the sounds to be recorded, and making a record thereof, substantially as described.

³ ~~with the source of sound at a considerable distance from the recording instrument~~
4. The process of making original sound records which consists in causing the emission towards ^{the source} a recording instrument of the sounds to be recorded, and dissipating the sound waves not directly conveyed from the sound source to the recording instrument, substantially as described.

⁴ ~~with the source of sound at a considerable distance from the recording instrument~~
5. The process of making original sound records which consists in locating the source of sound and the recording instrument in a housing having non-sound-reflecting walls and free from surfaces ^{tending to reflect} capable of reflecting the sound from the source into the recording instrument, causing the emission of the sounds to be recorded, and making a record thereof, substantially as described.

Inventor: Clarence S. Lane 5-10 am. 12/15

This specification signed and witnessed this 2 day of January 1902

Witnesses:

Thos. A. Edison

1. Frederick Bachmann

2. Anna P. Klehm

Oath.

State of New Jersey }
County of Essex } ss.,

THOMAS A. EDISON, the above named
petitioner, being duly sworn, deposes and says that he is a citizen of the United
States, and a resident of Llewellyn Park, West Orange, Essex County,
New Jersey

that he verily believes himself to be the original, first and sole inventor of the
improvements in METHOD OF RECORDING SOUNDS

described and claimed in the annexed specification; that he does not know and
does not believe that the same was ever known or used before his invention or
discovery thereof; or patented or described in any printed publication in the
United States of America or any foreign country before his invention or
discovery thereof, or more than two years prior to this application; or patented
in any country foreign to the United States on an application filed more than
twelve months prior to this application; or in public use or on sale in the
United States for more than two years prior to this application; and that no
application for patent upon said invention has been filed by him or his legal
representatives or assigns in any foreign country.

Thos. A. Edison

Sworn to and subscribed before me this 2nd day of January 1902

WILLIAM P. DE PATER
JERRY BULL
Notary Public.

[Seal]

Div. 23 Room 379

The Commissioner of Patents,
Washington, D. C.
J. H. D. -3.

2-200

Patent No. 4
All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON

February 14, 1912.

814
Thomas A. Edison,
Care Frank L. Dyer,
Orange, New Jersey.

U. S. PATENT OFFICE,
FEB 14 1912
MAILED.

Please find below a communication from the EXAMINER in charge of your application.

for Method of Recording Sounds, filed Jan. 4, 1912, serial number
669,868.

E. B. Moore

Commissioner of Patents.

All surfaces reflected sound somewhat, The matter of
reflection by different substances being a matter of degree.
Accordingly the process of claim 1 is impossible of performance
and the claim is accordingly rejected.

It is old to make the walls of a sound recording
chamber non reflecting for a portion of their area as see
Prescott, July 26, 1910, #965,327, (181-30). It is also well known
to provide a non reflecting surface for a greater or less
portion of the interior walls of an auditorium, see pages 92 and
93 of Kelly's Architectural Acoustics, published in 1898 by
Ginn and Wesley Print, Buffalo, New York, a copy of which volume
may be found on the examiner's desk and the disclosure in the
Scientific American of June 19, 1909, page 462 in an article
entitled, Method of Correcting Faulty Acoustic Properties of
Public Halls. In view that it is well known to surround partly a
source of sound where it is desired to prevent reflection,
invention is not found in extending the degree of such enclosure
even to the extent of total enclosure. Moreover, it being
desired to prevent reflection, the most obvious thing to do is to
locate the source of sound and recording instrument where there
is an absence of reflecting surfaces and it is not seen that

#869,,868-----2.

invention is involved in selecting such place. Accordingly all of the claims are rejected .

Claims 1, 2 and 4 are additionally rejected as specifying no more than using any well known recording instrument out of doors, a process that is not a subject of patentability.

Claim 3 is additionally rejected as specifying no more than using any common recording instrument in a tent, which is held not to be of patentable subject matter .

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison)
METHOD OF RECORDING SOUNDS)
Filed January 6, 1912)
Serial No. 669,868)

Room No. 379.

HONORABLE COMMISSIONER OF PATENTS.

S I R :

In response to the Office action of February 14, 1912, please amend the above entitled case as follows:

In line 16, page 2, after "done" insert - with the source of sound and the recording instrument - ; in line 17, same page, cancel "canvas" and after "tent" insert - or housing of heavy fabric, such as canvas - ; and in line 18, same page, change "walls" to - entire walls and roof - .

In line 3, claim 2, change "capable of reflecting" to - tending to reflect - .

In lines 4 and 5, claim 5, change "capable of reflecting" to - tending to reflect - .

Cancel claim 1 and change the numerals of claims 2 to 5 inclusive to 1 to 4 inclusive.

Add the following claims:

with the source of sound at a considerable distance from the recording instrument.
5. The process of making original sound records, *1/14*

which consists in locating the source of sound and the receiver of the recording instrument in a housing, the entire walls, roof, and floor of which tend to dissipate the sound waves impinging thereon, causing the emission of the sounds to be recorded, and making a record thereof by means of said recording instrument, substantially as described.

with the source of sound at a considerable distance from the recording instrument ^{7/3/4}

6. The process of making original sound records which consists in locating the source of sound and the receiver of the recording instrument in a housing having walls of yielding sound dissipating material and free from surfaces tending to reflect the sound waves from the source into the recording instrument, causing the emission of the sounds to be recorded, and making a record thereof, substantially as described.

with the source of sound at a considerable distance from the recording instrument ^{7/3/4}

7. The process of making original sound records, which consists in locating the source of sound and the receiver of the recording instrument in a housing having walls of sound dissipating fabric and free from surfaces tending to reflect the sound waves from the source into the recording instrument, causing the emission of the sounds to be recorded and making a record thereof, substantially as described.

with the source of sound at a considerable distance from the recording instrument ^{7/3/4}

8. The process of making original sound records, which consists in locating the source of sound and the receiver of the recording instrument in a housing having walls of heavy sound dissipating fabric and free from surfaces tending to reflect the sound waves from the source into the recording instrument, causing the emission of the sounds to be recorded and making a record thereof, substantially as described.

with the source of sound at a considerable distance from the recording instrument ^{7/3/4}

9. The process of making original sound records, which consists in locating the source of sound and the receiver of the recording instrument in a housing having walls and a roof ^{entirely} of sound dissipating fabric and a sound dissipating floor, causing the emission of the sounds to be recorded, and making a record thereof by means of said

recording instrument, substantially as described.

with the process of sound at a considerable distance from the recording instrument
10. The process of making original sound records,

which consists in locating the source of sound and the receiver of the recording instrument in a housing having walls and a roof entirely of heavy sound dissipating fabric and a sound dissipating floor, causing the emission of the sounds to be recorded, and making a record thereof by means of said recording instrument, substantially as described.

REMARKS

None of the references discloses applicant's invention. According to the disclosure of the patent to Prescott, some of the sound waves pass to the recording instrument directly while others are reflected from the surface 3 to the recording instrument; so that the corresponding direct and reflected sound waves reach the recording instrument at different times and the objectionable sound interference, which it is applicant's object to eliminate, is produced. None of the other references discloses a process of making sound records. The mere disclosure of an auditorium provided with a non-sound-reflecting surface for a portion of its interior walls, which is evidently what the Examiner desires to show by these references, does not, it is thought, constitute an anticipation of applicant's invention. In the first place, the necessary arrangement of parts to produce applicant's process is not disclosed or suggested in these references, there being no disclosure or contemplation whatever of a sound recording instrument. In the second place, these references do not, as stated above, even

suggest a process of making sound records. The decisions are clear on the point that a process is not necessarily anticipated by apparatus even if that apparatus might have been used to carry out the process. See for example, *Carnegie Steel Co., Ltd. v. Cambria Iron Co.*, 22 S. Ct. 698; 185 U.S. 403; 46 L. Ed. 968; 99 O.G. 1866; 1902 C.D. 592, in which it was held:

"To anticipate a process patent it is necessary not only to show that the prior patent might have been used to carry out the process, but that such use was contemplated or that it would have occurred to an ordinary mechanic in operating the device."

In the present case, the apparatus disclosed in the references is not even capable of carrying out the process set forth in the claims.

Referring to the last two paragraphs of the last Office action, it is pointed out that the Examiner's statements as to what the claims in question specify, are not entirely accurate in that these claims specify a process in which the source of sound and recording instrument are remote from surfaces tending to reflect the sound waves from the source into the recording instrument. Of course, applicant's process would not be anticipated by recording out of doors if such recording were done in the vicinity of a large surface capable of reflecting the sounds from the source into the recording instrument. If the claims are properly construed, it is not seen upon what ground the Examiner could, in the absence of pertinent references, hold that the process covered thereby, is unpatentable.

Applicant has obtained improved results by the process set forth in the claims; and as the latter, including the new claims, are not anticipated by the references, reconsideration and allowance are respectfully requested.

Respectfully submitted,

THOMAS A. EDISON

By Francis L. Dyer
his Attorney.

Orange, New Jersey,

January 23, 1913.

Div. 23. Room 379

2-200

Paper No. 4, Reg.

Address only
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

J. H. D.-Sut.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON

February 26, 1913.

Frank I. Dyer,

Orange, New Jersey.

U. S. PATENT OFFICE,
FEB 28 1913
MAILED.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, serial number 669,898, filed Jan. 6, 1912, for

Method of Recording Sounds.

4-6-2023

Commissioner of Patents.

This action is responsive to the amendment filed Jan. 24,
1913.

Applicant is required to file a drawing in this case
illustrating the process claimed.

Claims 1 and 3 are rejected as specifying only employment
of any conventional recording machine out of doors remote
from reflecting surfaces.

Claim 2 is rejected as specifying only the use of any
conventional recording machine in a tent, as for example, the
use of any dictating machine as Tainter, Dec. 27, 1887, #378,579,
(181-2).

Furthermore, all of the claims are rejected upon the
publications of record or the following: an article entitled
"Architectural Acoustics" by F. R. Watson, in the Scientific
American Supplement, 1909, volume LXVIII, page 391, New York,
Munn & Co., or a volume entitled Acoustics in Relation To
Architecture and Building, by T. Rogers Smith, page 39, London,
1876, Virtue and Co., Ivy Lane, in view of Prescott of record.

The publications cited show it to be well known when a

#569,868-----2.

reflection of sound produces an undesirable result to provide the reflecting surfaces with sound absorptive material; invention cannot be found in applying this known principle and expedient in a recording chamber, especially when such expedient is shown to be old to cover up all of that part of the surface which the patentee desired should not be reflective Applicant's choice of how much of the surface of the chamber should not be reflective cannot be seen to be a display of invention.

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON,)
METHOD OF RECORDING)
SOUNDS,) Room No. 379.
Filed January 6, 1912,)
Serial No. 669,868.)

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to the Office action of
February 26, 1913, please amend the above entitled case
as follows:

In line 1, claims 1, 2, 4, 5, 6, 7, 8, 9,
and 10 after "records" insert - with the source of sound at
a considerable distance from the recording instrument - .

In line 1, claim 3, after "records" insert
- with the sound source at a considerable distance from
the recording instrument - ; and in line 2, same claim,
change "a" to - the - .

R E M A R K S

A drawing illustrating the process claimed
will be filed as soon as the patentability of the claims
is determined.

It is submitted that the claims as now presented
are not anticipated by the prior art of record; and it
is thought that this will appear very clearly if the
Honorable Examiner will consider in connection with the
prior art the problem solved by applicant and the
results obtained by the inventor. It is no doubt
well known to the Examiner that the sound records of the

prior art give an unnatural and imperfect reproduction. The applicant's problem was to improve the reproductive qualities of such records, particularly when the records are made with the source of the sound to be recorded at a considerable distance from the recording instrument. In working upon this problem, applicant discovered, as stated in the second paragraph on page 2 of the specification, that the recording of reflected sound waves is the cause of the difference in quality between the sound as heard by the ear directly from the original sound source and as heard from the ordinary phonograph record. It should be borne in mind that this discovery is essentially connected with applicant's invention. Having made the said discovery, applicant evolved a sound recording process which eliminated the reflected sounds or sound waves from the record. By means of this process, he found that he could make a sound record capable of reproducing the original sound with a surprising increase in faithfulness. An improved result was thereby obtained.

Not one of the references of record discloses applicant's invention. The argument made in connection with the last amendment that none of the references discloses either applicant's process or apparatus whereby the same may be carried out, still applies in spite of the new citations made by the Examiner, attention being again directed to the said argument. The Examiner, it is thought, fails to take into consideration that applicant's problem was to record sounds and not merely to prevent the reflection of sounds, and that applicant made the valuable discovery that the recording of the reflected waves is the cause of the difference in quality between sounds as heard by the ear directly from the original sound source and as heard from the ordinary phonograph record. The claims do not call for a process for

preventing the reflection of sound waves, they call for a process of making original sound records with the source of sound at a considerable distance from the recording instrument, and the publications cited do not suggest any such process.

All the claims have been amended so as to more clearly define the invention by the addition of the statement that the source of sound is at a considerable distance from the recording instrument.

With reference to the grounds of rejection stated by the Examiner in the third and fourth paragraphs of the last Office action, attention is directed to the amendments made in the claims and also to the argument made above. There is no suggestion in the prior art of recording sounds out of doors remote from reflecting surfaces or in a tent free from sound reflecting surfaces, the source of sound being located at a considerable distance from the recording instrument.

Applicant has invented a new process involving an important discovery, producing an improved result, and not disclosed by the prior art. The claims are thought to properly define the invention; and reconsideration and allowance are respectfully requested.

Respectfully submitted,

THOMAS A. EDISON,

By Frank L. Rice
his attorney.

Orange, New Jersey,

February 3, 1914.

FB-MGX

DIV. 22 Room 379
"The Commissioner of Patents,
Washington, D. C."
and not any official by name.

2-290

Paper No. 6
All communications respecting this
application should give the serial number,
date of filing, title of invention, and
name of the applicant.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

102-Su

WASHINGTON

March 12, 1914.

Frank L. Dyer,

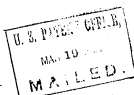
Orange,

N. J.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, for Method of Recording Sounds, filed Jan. 5,

1912, Serial No. 669,868.



Thomas Ewing
Commissioner of Patents.

c 4-208

In response to amendment of Feb. 4, 1914.

All of the claims are rejected upon the references and for the reasons of record. The common limitation that applicant has appended to the claims by the above noted amendment is clearly shown in Prescott of record. As a clear issue has been reached between applicant and this office as to the patentability of the subject matter of these claims, no reason is seen for further prosecution before the examiner. Accordingly, the rejection of the claims is made final. Ex parte Miller, 150 O. G., 827.

Legal Dept

Bechtel

Rec'd Dec. 27, 1911.
H. B.

Legal Dept

Patent.

Before this motion records
for the phonograph have been
recorded in rooms, which have
an Echo, the secondary & tertiary
& other vibrations due to reflection
from the walls of the building
are very greatly amplified
by the horn which it is
necessary to use with
the phonograph when recording.

The reflected sounds
produce interference

2

With the true sound waves
ought to be recorded
& the reproduced sound
is then made faintly &
is not ~~exactly~~ the same
as it is to the ear, ~~not~~ directly

I have discovered that
these reflected waves
is the cause of the
peculiar difference in
quality between the
sound as heard by the
ear & the sound as
reproduced from the
~~phonograph record,~~
~~when the~~

3

When the source of sound
is in close proximity to
the horn, the difference in
quality is not very noticeable
but when it is a
considerable distance
as some instruments in
an orchestra, or a
speaker the degradation
in quality is very marked
in many instances so
much so that ^{the} music
from some instruments

4

are very disagreeable

I have discovered that if the records are made when the phonograph, horn & source are in the open air or in a tent where there are no reflecting walls the floor being a dirt one, all interference ceases & the record is a true one no matter ~~what~~ if the distance of the voice or instrument is considerable

The quality is preserved there is no interference waves

5-

set up

Claim - Recording sound when the source is so distant from sound reflecting surfaces that there is no appreciable production of secondary waves -

Tent -

Etc Etc

Dec 27 1911

TAB

Patent Series

Patent Application Files

Folio # 815 Method of Making Sound-Record Molds

U.S. Patent #: 1099349

Primary Applicant: Edison, Thomas A

Date Executed: 1/2/1912

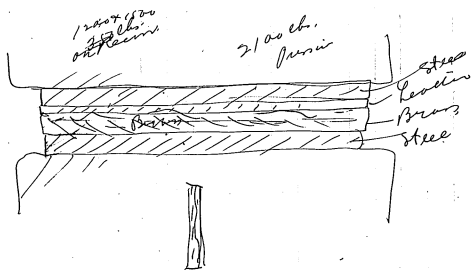
Received from Mr. Edison, Nov 22, 1911

Rec'd from H. E. - Nov 22, 1911
H.E.
J.B.

Patent use of brass as
backing for records
instead of Copper
which is spongy
also - patent the peening
of the brass before turning.

~~Claim taking for use~~
Claim use of diamond
cutting tools for turning
the plated master +
the backing
R.G.B.

Rec'd by L.H.
Nov 24 1911



Patent Series

Patent Application Files

Folio # 819 Charging Storage Batteries

U.S. Patent #: 1143818

Primary Applicant: Edison, Thomas A

Date Executed: 1/12/1912

Revised 12-18-1911 - H.E.

Legal Dept.

Patent Dec 17 1911
7-10-11

The object of this invention is ~~to~~ a method of charging storage batteries used along Railways in the signal houses and Semaphores, to render it unnecessary to remove the batteries frequently to distant points, recharge them & return them to the signal boxes -

Revised 12-18-1911

The invention consists of connecting the storage battery in each signal to say two extra rails, on the side of the track, raised up & insulated as is common in electric traction using shoes as on the Elevated RR in NY - The length of the two rails can be 30 ft or more

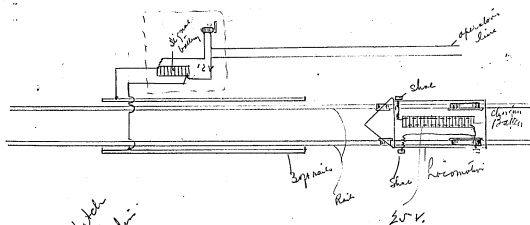
2

On the track is placed another storage battery, connected to a double shoe, the train in progressively approaching a signal, the double shoe coming in contact with the double rail gives the signal battery a heavy momentary charge & thus it does to every equal battery, ~~even~~ which is on the down or trip after the loco - The charge is so proportioned that with high speed express, the rate of is made very great whereas on slow fast trains, the rate is low, but the total

Charge is approximately
 the same - ~~the same~~

Thus the storage battery
 in the signal boxes is
 supplied all ways with
 more current than is
 ever given out by
 the working of the signals -

The battery on the loco
 is charged once or twice a
 month at the terminal
 points - This battery
 can also be used to
 light the Electric head
 light as well -
 Lashlain - This is I think now -



Revised Sketch
 6/15 by R.H.
 Dec 1961

Patent Series

Patent Application Files

Folio # 820 Phonograph-Record

U.S. Patent #: 1111999

Primary Applicant: Edison, Thomas A

Date Executed: 1/19/1912

Rec'd Dec. 18, 1911. \$13

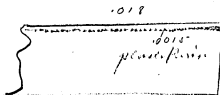
Lequel d'apt

Patent

Dec 17 1911
700E

The object of this invention is to improve the quality of phonograph records employing hard material like Celluloid the record which is improved by heat & pressure by intervening between the backing such as plaster or Davis, of a soft material like Rubber —

a. h.
L. h.
Juv.



Orlando
Rutten

Rubens

Mr Philpat will give you
further occasions & details of the
process —————
Beverly Mass 74

Rec'd by
Lewis
see 78

Patent Series

Patent Application Files

Folio # 821 Concrete Furniture

Serial #: 674274

Primary Applicant: Edison, Thomas A

Date Executed: 1/24/1912

Folio No. 821

Serial No. 74,274

Applicant.

Address.

Thos. A. Edison

Title Concrete Formulas

Filed Jan. 30, 1912

Examiner's Room No.

Assignee

Ass'g't Exec. Recorded Liber Page

Patent No. Issued

ACTIONS.

- 1 Rejected Feb. 13, 1912 16
- 2 Amended Feb. 11, 1913 17
- 3 Rejected March 18, 1913 18
- 4 Amended March 16, 1914 19
- 5 Rejected May 8, 1914 20
- 6 21
- 7 22
- 8 23
- 9 24
- 10 25
- 11 26
- 12 27
- 13 28
- 14 29
- 15 30

FRANK L. DYER,

Counsel,

Orange, New Jersey.

821

Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON
a citizen of the United States, residing and having a Post Office address at
Llewellyn Park, West Orange, Essex County, New Jersey

prays that letters patent may be granted to him for the improvements in

CONCRETE FURNITURE

set forth in the annexed specification; and he hereby appoints Frank L. Dyer
(Registration No. 560), of Orange, New Jersey, his attorney, with full
power of substitution and revocation, to prosecute this application, to make
alterations and amendments therein, to receive the patent, and to transact all
business in the Patent Office connected therewith.

Thos. A. Edison

S P E C I F I C A T I O N

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, Essex County, New Jersey, have invented certain new and useful improvements in CONCRETE FURNITURE, of which the following is a specification:-

My invention relates to the production of articles of furniture of concrete, and has for its object the provision of articles of this character which are strong, durable, fire-proof, cheaper than wood, and not subject to the deteriorating influences which affect wood.

My invention consists generally in furniture, each article of which comprises a skeleton or framework which of itself has sufficient strength to be self-sustaining and to withstand usage without breaking, the said skeleton or framework being covered with concrete. I may form the skeleton or framework as an integral structure or of parts secured together, assemble the framework thus formed in a suitable mold, and pour into the mold and around the framework a suitable concrete mixture. Or, I may mold the concrete around separate parts designed to form the framework of the article of furniture to be constructed, and then secure together the composite members thus formed. I prefer to employ metal for the framework.

In order that my invention may be better understood, reference is had to the drawings accompanying and forming a part of this specification, and in which -

Figure 1 is a perspective view of a chair constructed in accordance with my invention; and

Figure 2 is a sectional view of parts ready for assembling to form a portion of a bedstead constructed in accordance with a modified form of my invention.

Referring particularly to Figure 1, in full lines at 1 is shown a skeleton or framework which is preferably made of steel hollow pieces, such as pipes, in order to give lightness combined with the requisite strength. The pieces may be secured together by screw joints like those used with ordinary piping, or may be welded together by any suitable process as for example by the oxacetylene torch. Or, some of the joints may be made by welding and the others by other methods or means. The framework is then placed in a suitable sectional mold and positioned in the mold by small pieces of metal or concrete and surrounded by the cement mixture. After the cement mixture has hardened, the sections of the mold are removed, and the framework is left covered with concrete as is shown in dotted lines at 2. The article is then ready for use or for further treatment such as painting.

An article of furniture may also be constructed in accordance with my invention by forming composite members adapted to be secured together after molding. In Figure 2 I have shown several such composite members adapted to be secured together to form a portion of a bedstead. Each of these members consists of a frame piece 10 of suitable size and shape and preferably of steel tubing or piping. Each frame member is provided with means for fastening it

to adjacent members to which it is designed to be secured, as for example, screw threaded extensions 11 or screw threaded sockets or couplings 12. Each frame member has a covering of concrete molded thereon. A complete article of furniture in which the joints between adjacent sections are scarcely perceptible may be formed by securing together such composite members.

I prefer to employ a cement mixture or concrete of the character described and claimed in my application Serial No. 639,752, filed July 21, 1911. This cement mixture or concrete consists of cement, preferably Portland, mixed with very light porous sand or other aggregates, such as pumice stone, charcoal, coke, or furnace slag made porous by steam or other gases blown through the molten mass, and water.

The concrete surrounding the skeleton or framework may be molded in highly ornamental shapes. As the framework is made strong enough to be self-sustaining, and furthermore the steel has great strength in tension and the concrete considerable strength in compression, the composite article is of great strength as compared with articles made of reinforced concrete where the skeleton itself is not formed into or does not constitute a self-sustaining skeleton or frame.

In accordance with my invention, chairs, sofas, tables, bureaus and almost every article of household furniture may be constructed. These articles may be made of a highly ornamental character with a cheapness unattainable by the use of wood, and may be very light in weight, if desired.

The article may be painted, gilded or otherwise colored in any desired manner. Portions of articles of furniture as well as complete articles may be constructed in accordance with my invention.

Having now described my invention, what I claim and desire to protect by Letters Patent is as follows:-

- Carroll - 2,113*
1. An article of furniture including a self-sustaining framework covered with concrete, substantially as described.
 2. An article of furniture including a self-sustaining metallic framework covered with concrete, substantially as described.
 3. An article of furniture including a self-sustaining metallic framework covered with concrete composed of cement and porous aggregates, substantially as described.
 4. An article of furniture including a self-sustaining metallic framework covered with concrete composed of Portland cement and porous aggregates, substantially as described.
 5. An article of furniture including a self-sustaining metallic framework covered with concrete composed of Portland cement and pumice stone, substantially as described.
 6. An article of furniture including an integral self-sustaining framework covered with concrete, substantially as described.

Cancelled 240
7. An article of furniture including an integral self-sustaining metallic framework covered with concrete, substantially as described.

8. An article of furniture including an integral self-sustaining metallic framework covered with concrete composed of cement and porous aggregates, substantially as described.

9. An article of furniture including an integral self-sustaining metallic framework covered with concrete composed of Portland cement and porous aggregates, substantially as described.

10. An article of furniture including an integral self-sustaining metallic framework covered with concrete composed of Portland cement and pumice stone, substantially as described.

11. An article of furniture including composite members secured together, each of said members consisting of an inner frame member and an outer covering of concrete, substantially as described.

12. An article of furniture including composite members secured together, each of said members consisting of an inner metallic member and an outer covering of concrete, substantially as described.

13. An article of furniture including composite members secured together, each of said members consisting of an inner metallic member and an outer covering of concrete composed of cement and porous aggregates, substantially as described.

Cancelled 5-16
14. An article of furniture including composite members secured together, each of said members consisting of an inner metallic member and an outer covering of concrete composed of Portland cement and porous aggregates, substantially as described.

15. An article of furniture including composite members secured together, each of said members consisting of an inner metallic member and an outer covering of concrete composed of Portland cement and pumice stone, substantially as described.

16. An article of furniture including metallic members covered with concrete, said members being secured together and constituting a self-sustaining framework, substantially as described.

17. The process of making furniture which consists in forming a self-sustaining framework and molding concrete thereon, substantially as set forth.

18. The process of making furniture which consists in forming a self-sustaining metallic framework and molding concrete thereon, substantially as set forth.

19. The process of making furniture which consists in forming an integral metallic framework and molding concrete thereon, substantially as set forth.

20. The process of making furniture which consists in forming a self-sustaining metallic framework and applying thereto a covering of concrete composed of cement and porous aggregates, substantially as set forth.

Cancelled 2/1/13

21. The process of making furniture which consists in forming a self-sustaining metallic framework and applying thereto a covering of concrete composed of Portland cement and porous aggregates, substantially as set forth.

22. The process of making furniture which consists in forming a self-sustaining metallic framework and applying thereto a covering of concrete composed of Portland cement and pumice stone, substantially as set forth.

23. The method of making furniture which consists in forming frame members adapted to be secured together, covering the same with concrete so as not to interfere with the securing means, and securing together the composite members thus formed, substantially as set forth.

24. The method of making furniture which consists in forming metallic frame members adapted to be secured together, covering the same with concrete so as not to interfere with the securing means, and securing together the composite members thus formed, substantially as set forth.

Insert 2-Column 1-13 - Feb 11 1913

This specification signed and witnessed this 24 day of Jan. 1912

Thos. A. Edison

Witnesseth:

1. Henry Canavan
2. Anna P. Kleck

Oath.

State of New Jersey } ss.,
County of Essex

THOMAS A. EDISON, the above named petitioner; being duly sworn, deposes and says that he is a citizen of the United States, and a resident of West Orange, Essex County, New Jersey

that he verily believes himself to be the original, first and sole inventor of the improvements in

CONCRETE FURNITURE

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

Thos. A. Edison

Sworn to and subscribed before me this 24 day of Jan. 1912

Anna P. Kleck

[Seal]

Notary Public.

821

Fig. 1

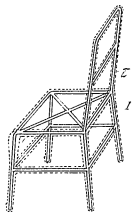
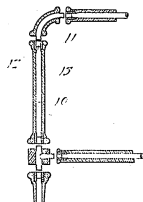


Fig. 2



Witnesses:

Frank O. Lewis
Henry Lewis

Inventor:

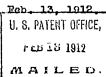
James H. Lewis
John H. Lewis

Address only
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

Thomas A. Edison,
c/o Frank L. Dyer,
Orange, N.J.



Please find below a communication from the EXAMINER in charge of your application.

#674,274, filed Jan. 30, 1912, for Concrete Furniture.

E. B. Sullivan

Commissioner of Patents.

Applicant's attention is called to Ex parte Chapman, 120 O.G., 2446; Ex parte Riley, C.D., 1902, page 416; and Ex parte Kadow, 154 O.G., 1413, regarding multiplicity of claims and claims not patentably different. For instance, claims 6, 7, 8, 9, and 10 differ from claims 1, 2, 3, 4, and 5, respectively, only in the insertion of the word "integral" in each claim. This is an unnecessary multiplication of claims. A single claim will cover this difference just as well as five.

Claims 11, 12, 13, 14, and 15 are objectionable for similar reasons.

Claims 3, 4, 5, 8, 9, 10, 13, 14, 15, 20, 21, and 22 are all objectionable in that they attempt to combine and confuse structural elements of which an article is composed, and a composition of matter. It is of no consequence in applicant's device of what particular composition the concrete element be formed, or which one of the innumerable concrete compositions applicant prefers to use in his construction, and applicant should not, therefore, attempt to define a novel structure in his claim, by setting forth the chemical composition of one of its elements. The particular composition of applicant's concrete element is old in Lande, 299,810, Jan. 3, 1884; Parshall, 323,722, Aug. 4, 1885, Class 106/242, and the recital, therefore, of this particular composition,

#674,274-----2.

even were it proper to do so, does not affect the novelty of the alleged combination set forth.

All the claims are anticipated by

Burns, 909,540, Jan. 12, 1909, or
English patent, 2027 of 1874, Chaires; or
Price, 948,776, Feb. 8, 1910, Tables,

in view of

Noll, 910,950, Jan. 26, 1909, cross-reference in Tables, Pedestals,
and Crow, 839,272, Dec. 15, 1905, Class 72/85.

The first three references show it to be old to mold furniture from cement and other materials having similar properties, providing suitable metallic or other reenforcing means to strengthen the structure, either by arranging the reenforce and molding the cement about it, or forming an outer metallic shell and filling it with cement as in Burns. Noll shows it to be old to form a composite structure by molding each individual section about a reenforcing member and then connecting the members together by suitable means. Crow shows a structure built up of sections each comprising a metallic pipe, threaded at the ends, and surrounded by cement, the finished sections being afterwards assembled by means of the identical joint shown in applicant's Fig. 2. To apply this structure to the furniture shown in Burns, English patent or Price would involve only the exercise of mechanical skill.

Attention is called to Small, 590,690, Sept. 28, 1897, Class 72/70, and Graham, 865,490, Sept. 10, 1907, Class 72/15.

All the claims are rejected.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison
CONCRETE FURNITURE
Filed January 30, 1912
Serial No. 674,274

Room No. 131

HONORABLE COMMISSIONER OF PATENTS.

S I R :

In response to the Office action of
February 13, 1912, please amend the above entitled case
as follows:-

Cancel the claims and insert the following: -

1. ^{Ante table 3/10/14}
An article of furniture comprising a structure
consisting of a framework of composite members, said com-
posite members each being composed of a metallic member
exteriorly covered with concrete, and said metallic members
being united to form a self-sustaining skeleton framework,
substantially as described.

2. ^{Ante table 3/10/14}
An article of furniture comprising a structure
consisting of a framework of composite members, said com-
posite members each being composed of a metallic member
exteriorly covered with concrete containing porous aggre-
gates, and said metallic members being united to form a
self-sustaining skeleton framework, substantially as de-
scribed.

3. ^{Ante table 3/10/14}
An article of furniture comprising a structure
consisting of a framework of composite members, said com-

posite members each being composed of a metallic member exteriorly covered with concrete containing aggregates of pumice stone, and said metallic members being united to form a self-sustaining skeleton framework, substantially as described.

4. ^{Ante table 3/16/14} An article of furniture comprising a structure consisting of a framework of composite members, said composite members each being composed of a metallic member exteriorly covered with concrete, and said metallic members being united to form a self-sustaining integral skeleton framework, substantially as described.

5. ^{Ante table 3/16/14} An article of furniture comprising a structure consisting of a framework of composite members, said composite members each being composed of a metallic member exteriorly covered with concrete containing porous aggregates, and said metallic members being united to form a self-sustaining integral skeleton framework, substantially as described.

6. ^{Ante table 3/16/14} An article of furniture comprising a structure consisting of a framework of composite members, said composite members each being composed of a metallic member exteriorly covered with concrete containing aggregates of pumice stone, and said metallic members being united to form a self-sustaining integral skeleton framework, substantially as described.

7. ^{Cancelled 3/14/14} The process of making furniture, which consists in forming a self-sustaining metallic skeleton framework, and molding concrete upon the members of said framework to cover the same and form a composite framework structure, substantially as set forth.

Continued 8/16/45

8. The process of making furniture, which consists in forming a self-sustaining metallic skeleton framework, and molding concrete containing porous aggregates upon the members of said framework to cover the same and form a composite framework structure, substantially as set forth.

9. The process of making furniture, which consists in forming a self-sustaining metallic skeleton framework, and molding concrete containing aggregates of pumice stone upon the members of said framework to cover the same and form a composite framework structure, substantially as set forth.

10. The process of making furniture, which consists in forming a self-sustaining integral metallic skeleton framework, and molding concrete upon the members of said framework to cover the same and form a composite framework structure, substantially as set forth.

11. The process of making furniture, which consists in forming a self-sustaining integral metallic skeleton framework, and molding concrete containing porous aggregates upon the members of said framework to cover the same and form a composite framework structure, substantially as set forth.

12. The process of making furniture, which consists in forming a self-sustaining integral metallic skeleton framework, and molding concrete containing aggregates of pumice stone upon the members of said framework to cover the same and form a composite framework structure, substantially as set forth.

Cancelled 2/19/44

13. The process of making furniture, which consists in forming a self-sustaining metallic framework, assembling the framework in a suitable mold, pouring into the mold and around the framework a concrete mixture containing aggregates of pumice stone, and removing the mold after the concrete has hardened, substantially as set forth. -

REMARKS

While it is not thought that the claims canceled are properly anticipated by the references cited, new claims have been submitted which are believed to define applicant's invention more accurately. The concrete mixture described in the patent to Lande, No. 299,810, is intended to form a hard durable artificial stone which will not easily chip or wear. There is no disclosure of a relatively light composition intended to cover a metallic framework to form an article of furniture. It does not appear that the iron slag used by Lande is porous. In the composition described in the patent to Parshall, No. 323,722, a material of stiff consistency is produced which is not capable of being poured, as is the case with the concrete mixture employed by applicant, but is applied with a trowel. Furthermore, the pumice stone employed in the mixture of Parshall is finely pulverized and not employed in the form of aggregates as in applicant's mixture. The fine pulverizing of the pumice stone serves to destroy its porous structure and does not afford a resulting composition of the requisite lightness. The patent to Burns, No. 909,540 shows a sheet metal structure which is filled with a composition of matter capable of hardening, but does not show a self-sustaining framework

in which the members are covered exteriorly with a concrete mixture. The patent to Price, No. 948,770, does not disclose a structure in which there is a self-sustaining framework. British patent No. 2027 of 1874 is rather indefinite in its disclosure, on account of the large number of substances referred to in general terms. It is not believed that the disclosure of this patent is of such a character as to enable one skilled in the art to carry out the invention without prolonged experimenting. It seems clear, however, that this patent does not show a self-sustaining metallic framework, and the material molded is molded by pressure and not poured. The patent to Holl, No. 910,950, shows a concrete fence made up of members, but does not show a self-sustaining metallic framework. The patent to Crow, No. 839,272, shows a pole made of cement covered members joined together, and does not show a framework. No specific compositions are disclosed in the patents to Burns, Price, Holl, Crow, Small, or Graham. In the structures shown in the patents to Small and Graham, the resulting structure does not constitute a composite framework structure.

It is believed that applicant is entitled to specify or set forth the characteristics of the concrete employed to cover the skeleton framework in some of the claims, inasmuch as the character of this material is of importance in rendering applicant's invention practicable. Furthermore, it is believed that there is a patentable distinction between those claims in which an integral skeleton framework is recited and those claims in which the integral feature is omitted, inasmuch as there are certain advantages

secured by having the skeleton framework integral, and structures having the integral framework constitute one species of applicant's invention.

It is thought that the claims now presented distinguish patentably from the art cited. Reconsideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Wagon

His Attorney

Orange, New Jersey

February 11th, 1913.

Div. 8 Room 131 85

2-260

Paper No. 4

Addressed
To The Commissioner of Patents,
Washington, D. C.

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

March 18, 1913

Frank L. Dyer,

Orange, N. J.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Wilson, #574,274 filed Jan. 30, 1912 for Concrete Furniture

E. B. Wilson

Commissioner of Patents.

4-8-1025

Amendment of Feb. 12, 1913 is of record.

Claims 1 to 6 are rejected on the English reference 2027, of 1874 of record. This patent describes and shows a skeleton framework covered with concrete. They are also rejected on Burns in view of Noll, both of record. In view of Noll's showing, the application of the concrete to the exterior of the skeleton frame work instead of the interior is devoid of all novelty. These claims are also believed to be fully anticipated by Graham of record, or Crow of record, who have a self supporting skeleton frame work to which concrete is applied exteriorly. It is not believed that the argument of non-analogous art applies merely because applicant has chosen another form of article to illustrate his idea. The result desired and means by which it is accomplished is the same in these cases.

Claims 3, 5 and 6 are further rejected on the ground of aggregation. There is no relation between the structural arrangement and the kind of material used. Adding to the practicability of the devices, even if true, (being a matter of opinion merely) cannot affect the question of patentable combination. Moreover, the material used is disclosed by Parshall of record, the size of aggregate being necessarily dictated by the finish desired. The use of concrete in stiff and web conditions and their respective

674,274-----2.

advantages are well known and it cannot therefore affect the applicability of a reference. Applicant's attention is also called to the statements made in the previous Office action on this point.

The remaining claims are rejected on 896,877, ⁵Senior, May, 5, 1908. They are also rejected on the ground that they are claims for a non-patentable process. The steps mentioned are obvious from the finished article and fully disclosed by it.

It is not believed that the applicant has differentiated or attempted to differentiate from the previous claims or limited their scope and therefore a reiteration of the previous rejections and objections is sufficient; but that the issue may be as clearly defined as possible, a further application and explanation of the references has been attempted.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

CONCRETE FURNITURE

Room No. 131

Filed January 30, 1912

Serial No. 674,274

HONORABLE COMMISSIONER OF PATENTS,

SIR:- In response to the Office action of March 18, 1913, please amend the above entitled case as follows:-

In line 1 of each of claims 1 to 6 inclusive, before "article" insert - portable - .

Cancel claims 7 to 13 inclusive.

R E M A R K S

The process claims have been canceled because it is believed that applicant's invention will be adequately protected by the article claims submitted. The article claims 1 to 6 inclusive have been amended to set forth definitely that the article is a portable one. As pointed out in the argument accompanying the amendment dated February 11, 1913, the British patent No. 2027 of 1874 does not show a self-sustaining metallic framework, and the disclosure of this patent is too indefinite, because of the large number of substances referred to in general terms, to enable one even though skilled in the art to carry out the invention. It is believed that this patent should be withdrawn as a reference, or, if further rejection of the claims is

made upon it, the Examiner should point out what portion of the disclosure of the patent he relies upon. The patent to Burns, No. 909,540, shows a sheet metal structure which is filled with a composition of matter capable of hardening, but does not show a self-sustaining framework in which the members are covered exteriorly with a concrete mixture. The thin metal employed by Burns simply serves as a mold or frame for the article to give the same form while it is being made, and is not relied upon to furnish the strength necessary in an article of furniture. In applicant's invention the skeleton or framework has sufficient strength of itself to be self-sustaining and to withstand usage without breaking. The patent to Holl, 910,950 simply shows reinforcing tension members embedded in concrete. The patent to Graham, No. 865,490, shows an arrangement of reinforcing for building construction arranged within the body or mass of concrete to afford added strength thereto (see page 1 of Graham's specification, lines 10 and 11). In other words, Graham's construction is merely a variation of ordinary reinforced concrete construction. The patent to Crow, No. 839,272, does not show a framework covered with concrete but simply an elongated pole made up of concrete covered sections.

The Examiner has rejected claims 3, 5 and 6 on the ground of aggregation. It is believed that all parts of the structure defined in these claims co-operate to produce the desired result and that the rejection upon the ground of aggregation is untenable. As pointed out in the specification of this application and in the specification of applicant's prior application Serial No. 639,752 referred to on page 3, the use of a concrete containing porous aggregates or containing aggregates of pumice stone results in

a superior product for the purpose intended, and is believed to amount to invention. In this connection, extracts from the following decisions are cited:-

"The substitution of one material for another may amount to invention where a superior product results from the substitution."
Eureka Plotter Bath Company vs. Nicholas et al.
157 F. 556.

"The use of a different material in constructing an article previously patented involves invention where it produces a useful result, increased efficiency, or a decided saving in operation."
George Frost Co. et al. vs. Samstag et al.
180 F. 729.

"The substitution of one material for another involves invention where the substituted material is used in a relation in which it had not before been used and in which it accomplished new and very beneficial results."
119 F. 505.

Furthermore, as pointed out in the argument previously filed, the pumice stone employed in the mixture of Parshall No. 323,722, is finely pulverized and is not employed in the form of aggregates.

Claims 4, 5 and 6 distinguish also from the references in reciting that the self-sustaining skeleton framework is integral, which is a feature not shown in any of the references.

Reconsideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Myer

His Attorney

Orange, New Jersey

March 16, 1914

HL-JS

Div. 10 Room 308

Address
"The Commissioner of Patents,
Washington, D. C.,"
and not any official by name.

S-500

H. D. B.

L.G.

Paper No. 4

All communications respecting this
application should give the serial number,
date of filing, title of invention, and
name of the applicant.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

May 8, 1914.

Frank L. Dyer,

Orange,

New Jersey.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Serial No. 674,874, filed Jan. 30, 1912, for

Concrete Furniture.

U. S. PATENT OFFICE,
MAY 8 1914
MAILED.

Thomas Edison
Commissioner of Patents.

45-2081

In response to the amendment filed Mar. 17, 1914:

The claims are each rejected on the references and for
the reasons of record.

As the amendment does not in any way alter the scope of
the claims, this rejection is made final.

Legal Dept -

Revised Dec 30, 1911

THE

The object of this invention is to provide means whereby articles of furniture may be constructed out of Cement.

The invention consists in forming a steel skeleton of the piece of furniture desired which skeleton is of itself has sufficient strength to withstand usage without breaking & the whole or parts of this skeleton placed in moulds around which Cement preferably Portland Cement is poured to fill out the flesh so to speak of the article desired ~~in the form of a chair~~. The invention is illustrated by a chair

Patented
Dec 30, 1911

In most cases thin steel pipe is preferred to construct the skeleton of the article to be manufactured to give lightness the joints of the pipe may be secured together by screw joints like that used with ordinary piping or where possible the joints can be welded together by the oxy-acetylene torch.

The Chair illustrated may be placed in a mould centralized by means of small pieces of metal or Cement & the whole surrounded with Cement or it may be moulded in several parts & these parts screwed together this is easily possible as Portland Cement accurately follows the mould and has practically the no appreciable expansion or contraction in moulding hence the joints can scarcely be seen. The concrete employed is that described in my application
being entirely of pure cement

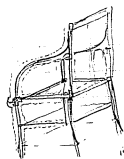
aggregates ^{or other similar porous material} sand, with portland
Cement

As the Cement surrounding the skeleton
can be moulded in highly ornamental
shapes and is very strong when
compressed and as the steel in tension
is of itself strong enough to withstand
usage it will be seen that the
combination will produce articles
of great strength as compared to
metallic reinforcement where the
skeleton of itself is not strong enough
without the Cement.

Brighten Claim on new article
mfg -

Consideration that chair sofas -
tables Bureaus & almost every article
of household use is capable of being
made by this process & of

a highly ornamental character
with a cheapness unattainable
by ~~any~~ the use of wood -
The article can then be painted
in any desired manner -



Patent Series

Patent Application Files

Folio # 825 Means for Reducing Sounds

U.S. Patent #: 1190133

Primary Applicant: Edison, Thomas A

Date Executed: 2/15/1912

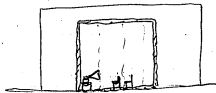
Mr. J. S. Lewis
Jan 30 1912

30 Jan 1912

764

Take out another patent -

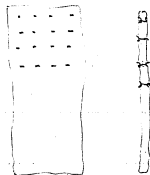
Room for recording sounds
mufles & elimination of Echoes



Room within a room. the smaller room
being made of mattress like sections,
about 2 to 3 inches thick, the stuffing
being asbestos fibre ~~unmixed~~
with powdered material like
Magneite, Chalk, etc in
such proportions as to make

2

the mattress like walls light &
Elastic.



Made like a Comfortable -
used on beds & house built
of it - or the walls of the
large room itself including
the Ceiling & floor can be
covered with these mattress
like sections. There is very
little reflection of sound

as the sound waves pass
 into the Alveolas filling
 & is lost as heat by the friction
 hence one not recorded in
 the phonograph and the quality
 of the most distant performer
 from the ~~most distant~~ though
 funnel is correct & has no
 barrel sounds —

5

Patent Series

Patent Application Files

Folio # 826 Insulating Coatings for Storage Battery Containers and
Other Articles

Serial #: 679744

Primary Applicant: Edison, Thomas A

Date Executed: 2/23/1912

Folio No. 826

Serial No. 679,744

Applicant.

Address.

Thomas A. EdisonTitle Insulating Coatings for Storage Battery Containers
and other ArticlesFiled Feb. 24, 1912Examiner's Room No. 308

Assignee

Ass'g't Exec.

Recorded

Liber

Page

Patent No.

Issued

ACTIONS.

1	<u>Office letter May 8, 1912</u>	16	<u>See Serial No. 679,744</u>
2	<u>Amendment May 5, 1913</u>	17	<u>See Serial No. 679,744</u>
3	<u>Reopened July 7, 1913</u>	18	<u>See Serial No. 679,744</u>
4		19	
5		20	
6		21	
7		22	
8		23	
9		24	
10		25	
11		26	
12		27	
13		28	
14		29	
15		30	

VALUED

FRANK L. DYER,

Counsel,

Orange, New Jersey.

Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON,
a citizen of the United States, residing and having a Post Office address at
Mellowlyn Park, West Orange, Essex County, New Jersey,

prays that letters patent may be granted to him for the improvements in

- INSULATING COATINGS FOR STORAGE BATTERY CONTAINERS
AND OTHER ARTICLES -

set forth in the annexed specification; and he hereby appoints Frank L. Dyer
(Registration No. 560), of Orange, New Jersey, his attorney, with full
power of substitution and reboation, to prosecute this application, to make
alterations and amendments therein, to receive the patent, and to transact all
business in the Patent Office connected therewith.

Thomas A. Edison

*Submitted
7/27/97
June 11, 1911. The Edison 947
has been in my hands.
C. A. Smith M.
H.*

S P E C I F I C A T I O N

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, Essex County, New Jersey, have invented certain new and useful improvements in INSULATING COATINGS FOR STORAGE BATTERY CONTAINERS AND OTHER ARTICLES, of which the following is a specification:-

My invention relates to the provision of an insulating and protective covering or coating for articles of various kinds, and more particularly to the provision of such a coating for metal storage battery cans or containers, and for the trays in which the storage battery cells are assembled.

In storage batteries of the Edison type, the can or container is made of steel, and may or may not be nickel-plated on the exterior. It is desirable to provide a protective and insulating coating upon the exteriors of these cans or containers, and in the practice of my invention as applied to such cans or containers, I proceed as follows: A very adherent, flexible and relatively soft, preliminary or first coating is provided preferably in the following manner:- A solution consisting of a substance of asphaltic nature dissolved in a suitable solvent is prepared, and the can or container dipped therein so as to immerse as much of the can as it is desired

to coat. The solvent is permitted to evaporate, leaving the can or container coated with a layer of the soft residuum of asphaltic nature. I have found that artificial asphalts, such as byerlyte and parolite, dissolved in benzine, form excellent solutions for this purpose. The solution for the preliminary or first coating displaces all air from the surface of the can or container, and after evaporation of the solvent there is left a very adherent, flexible and relatively soft coating upon the can or container. This coating has insulating properties and is not attacked by the potash or other strong alkalis which are contained in electrolytes of storage batteries.

After the preliminary or first coating is dry, the can or container is dipped into a hot molten insulating compound containing a halogen derivative of naphthalene so as to immerse the portion of the can previously coated. The compound preferably employed is called "tetrol" and consists of tetra-chloro-naphthalene and asphalt. The term "tetra-chloro-naphthalene" is a trade designation for a product formed by the chlorination of naphthalene, which crystallizes as a felt of flexible, fibrous crystals. It is apparently a mixture of various chlorine substitution products of naphthalene, probably the tri-, tetra-, and penta-chloro-naphthalenes, having substantially the same average composition as tetra-chloro-naphthalene. Tetrol is prepared by melting together suitable quantities of either crude or pure tetra-chloro-naphthalene and asphalt. The preferred proportions for the tetrol are 2 pounds of

"A" California asphalt and six pounds of pure tetra-chloro-naphthalene. After removing the can or container from the melted tetrol, and permitting it to cool, it is found to be covered with an additional layer or coating of a rather hard and durable, insulating and protecting compound. I have found that a suitable thickness of the additional layer or coating for storage battery cans may be obtained by bringing the preliminarily coated can to a temperature of about 65° F. and dipping it into molten tetrol having a temperature of about 220° F., but the process may be carried on at other temperatures.

The layer or coating of tetrol is tough and flexible even at low temperatures and does not become soft or sticky until heated considerably above ordinary temperatures. It is not porous, and is not attacked by acids or alkalis, even when the acids or alkalis are hot. In my application Serial No. 604,926, filed January 27, 1911, I have described and claimed this insulating compound and the method of making it.

When tetrol is applied directly to articles to be coated, such as cans or containers made of steel, it is liable to strip off. All liability to such stripping off is overcome by the use of the preliminary coating which is of a sticky nature and very adherent, and which is applied from a liquid which has displaced all of the air on the surface of the article. The preliminary or first coating is very adhesive and cannot be stripped off from the steel. The tetrol adheres perfectly to the preliminary or first coating and the two coatings form a single com-

posite coating which cannot be stripped off.

My improved process is applicable to other articles of various kinds, such as wooden or metal trays for storage battery cells, conducting wires, armatures, and armature and other coils, and may be carried out in the manner hereinbefore described in connection with the coating of storage battery cans or containers.

Having now described my invention, what I claim as new therein and desire to protect by Letters Patent is as follows:-

1. The process of providing an article with an insulating coating, which consists in first applying a coating of adherent material to the article, and then applying a coating containing a halogen derivative of naphthalene, substantially as set forth.
2. The process of providing an article with an insulating coating, which consists in first applying a coating of adherent material to the article, and then applying a coating containing a chlorine derivative of naphthalene, substantially as set forth.
3. The process of providing an article with an insulating coating, which consists in first applying a coating of adherent material to the article, and then applying a coating containing tetra-chloro-naphthalene, substantially as set forth.
4. The process of providing an article with an insulating coating, which consists in first applying a

coating of adherent material to the article, and then applying a coating containing tetra-chloro-naphthalene and an amorphous substance, substantially as set forth.

5. The process of providing an article with an insulating coating, which consists in first applying a coating of adherent material to the article, and then applying a coating containing tetra-chloro-naphthalene and asphalt, substantially as set forth.

6. The process of providing an article with an insulating coating, which consists in first applying a coating of adherent material to the article from a solution adapted to displace all of the air from the surface of the article, and then applying a coating containing a halogen derivative of naphthalene, substantially as set forth.

7. The process of providing an article with an insulating coating, which consists in first applying a coating of adherent material to the article from a solution adapted to displace all of the air from the surface of the article, and then applying a coating containing a chlorine derivative of naphthalene, substantially as set forth.

8. The process of providing an article with an insulating coating, which consists in first applying a coating of adherent material to the article from a solution adapted to displace all of the air from the surface of the article, and then applying a coating containing tetra-chloro-naphthalene, substantially as set forth.

9. The process of providing an article with an insulating coating, which consists in first applying a coating of adherent material to the article from a solution adapted to displace all of the air from the surface of the article, and then applying a coating containing tetra-chloro-naphthalene and an amorphous substance, substantially as set forth.

10. The process of providing an article with an insulating coating, which consists in first applying a coating of adherent material to the article from a solution adapted to displace all of the air from the surface of the article, and then applying a coating containing tetra-chloro-naphthalene and asphalt, substantially as set forth.

11. The process of providing an insulating coating for an article, which consists in first applying a coating of adherent, flexible, relatively soft insulating material, and then applying a coating containing tetra-chloro-naphthalene, substantially as set forth.

12. The process of providing an insulating coating for an article, which consists in first applying a coating of adherent, flexible, relatively soft, insulating material, and then applying a coating containing tetra-chloro-naphthalene and asphalt, substantially as set forth.

13. The process of providing an article with an insulating coating, which consists in first applying a solution composed of an adherent material of asphaltic nature dissolved in a volatile solvent, permitting the solvent to evaporate, and then applying a coating con-

taining a halogen derivative of naphthalene, substantially as set forth.

14. The process of providing an article with an insulating coating, which consists in first applying a solution composed of an adherent material of asphaltic nature dissolved in a volatile solvent, permitting the solvent to evaporate, and then applying a coating containing a chlorine derivative of naphthalene, substantially as set forth.

15. The process of providing an article with an insulating coating, which consists in first applying a solution composed of an adherent material of asphaltic nature dissolved in a volatile solvent, permitting the solvent to evaporate, and then applying a coating containing tetra-chloro-naphthalene, substantially as set forth.

16. The process of providing an article with an insulating coating, which consists in first applying a solution composed of an adherent material of asphaltic nature dissolved in a volatile solvent, permitting the solvent to evaporate, and then applying a coating containing tetra-chloro-naphthalene and an amorphous substance, substantially as set forth.

17. The process of providing an article with an insulating coating, which consists in first applying a solution composed of an adherent material of asphaltic nature dissolved in a volatile solvent, permitting the solvent to evaporate, and then applying a coating containing tetra-chloro-naphthalene and asphalt, substantially as set forth.

18. An article having a composite insulating coating composed of an inner coating of adherent, flexible, relatively soft, insulating material, and an outer coating containing a halogen derivative of naphthalene, substantially as set forth.

19. An article having a composite insulating coating composed of an inner coating of adherent, flexible, relatively soft, insulating material, and an outer coating containing a chlorine derivative of naphthalene, substantially as set forth.

20. An article having a composite insulating coating composed of an inner coating of adherent, flexible, relatively soft, insulating material, and an outer coating containing tetra-chloro-naphthalene, substantially as set forth.

21. An article having a composite insulating coating composed of an inner coating of adherent, flexible, relatively soft, insulating material, and an outer coating containing tetra-chloro-naphthalene and an amorphous substance, substantially as set forth.

22. An article having a composite insulating coating composed of an inner coating of adherent, flexible, relatively soft, insulating material, and an outer coating containing tetra-chloro-naphthalene and asphalt, substantially as set forth.

23. A storage battery container having a composite insulating coating composed of an inner coating of adherent, flexible, relatively soft, insulating material, and an outer coating containing a halogen derivative of naphthalene, substantially as set forth.

24. A storage battery container having a composite insulating coating composed of an inner coating of adherent, flexible, relatively soft, insulating material, and an outer coating containing a chlorine derivative of naphthalene, substantially as set forth.

25. A storage battery container having a composite insulating coating composed of an inner coating of adherent, flexible, relatively soft, insulating material, and an outer coating containing tetra-chloro-naphthalene, substantially as set forth.

26. A storage battery container having a composite insulating coating composed of an inner coating of adherent, flexible, relatively soft, insulating material, and an outer coating containing tetrachloro-naphthalene and an amorphous substance, substantially as set forth.

27. A storage battery container having a composite insulating coating composed of an inner coating of adherent, flexible, relatively soft, insulating material, and an outer coating containing tetra-chloro-naphthalene and asphalt, substantially as set forth.

This specification signed and witnessed this 23rd day of February 1912

Thomas A. Edison

Witnesseth:

1. Henry Lamahan
2. Freda P. Klehn

Oath.

State of New Jersey } ss.,
County of Essex

THOMAS A. EDISON, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of Howelwyn Park, West Orange, Essex County, New Jersey,

that he verily believes himself to be the original, first and sole inventor of the improvements in INSULATING COATINGS FOR STORAGE BATTERY CONTAINERS AND OTHER ARTICLES,

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

Thomas A. Edison

Sworn to and subscribed before me this 23rd day of February 1912

Freda P. Klehn

Notary Public.

[Seal]

Div. 15 Room 308
Address
"The Commissioner of Patents,
Washington, D. C."

2-280

CSJ

826

Paper No. 2
All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

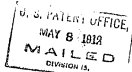
May 8, 1912.

Thomas A. Edison.

WASHINGTON

c/o Frank L. Dyer.

Grange, N. J.



Please find below a communication from the EXAMINER in charge of your application.
for, INSULATING COATINGS FOR STORAGE BATTERY CONTAINER AND OTHER
ARTICLES. filed Feb. 24, 1912. #679,744.

E. B. Moore

Commissioner of Patents.

This case has been examined.

Claims 1, to 17, inclusive are apparently met in,
Netting #797,702 Aug. 22, 1906 (91-68) with
Stempel #732,665 June 30, 1903 (same) in view of the fact
that applicants insulating compound "containing" a halogen deriv-
ative of naphthalene and asphalt is covered in applicants copending
case #604,926 on which certain claims have been allowed, Netting
shows a preliminary coating, and Stempel shows the use of asphalt
as a priming coating.

Claims 1, to 12, are open also to this objection, namely to
the priming coating in each of these claims is attributed certain
functional capabilities; the secondary coating is defined in more
or less precise chemical terminology; (Query), What is the relation
in any of these claims between the functional capability of the
first coating, and the chemical characteristics of the second
coating.

In claims 13 to 17, the chemical nature of the primary coat-
ing is characterized by terms more or less broadly definitive, but
terms which are responsive to the chemical character of the second
coating, hence the objection does not apply.

Claims 18 to 27, inclusive are drawn to the article. The

Edison #679,744.

claims are either the subject of division if a different invention or as is more probable., simply the description of the article rather than the process and consequently not patentable over the process claims.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

INSULATING COATINGS FOR
STORAGE BATTERY CONTAINERS
AND OTHER ARTICLES

Filed February 24, 1912

Serial No. 679,744

Room No. 308.

HONORABLE COMMISSIONER OF PATENTS.

S I R :

In response to the Office action of May 8, 1912. The patent to Nutting, 797,702, describes a method of treating wooden bobbins to make them moisture-repellent, which consists in immersing the bobbins in a bath of very thin shellac and thereby impregnating the same. After the surplus shellac has been permitted to run or drip off and when the bobbins are dry, they are given a final coating of thick shellac. This patent does not disclose the use of any of the materials employed in applicant's process. The patent to Stempel, 732,663, relates to a method of applying a protective composition which consists in applying powdered asphaltum to the surface to be protected, fusing the asphaltum, and then applying a protective covering in a cold state consisting of finely ground mixture of asphaltum, asbestos, and an obstructive material, such as sand, ground stone, pulverized limestone, or kaolin. This patent does not disclose the use of a material containing a halogen derivative of naphthalene and does not disclose the step of first applying a coating of adherent material from a solution or of applying a solution composed of an adherent

material of asphaltic nature dissolved in a volatile solvent. The Examiner also refers to applicant's copending application Serial No. 604,926, which relates to an insulating compound and the method of making the same. In applicant's co-pending application there is no disclosure of a preliminary coating. The Examiner apparently contemplates combining the patents to Hutting and Stempel and applicant's copending application as an anticipation of claims 1 to 17. The manner in which such patents and application are to be combined for this purpose is not clear. While it is true that in some aspects applicant's present invention consists in an improved method of using the insulating compound described in his copending application and in the improved article resulting from such process, neither the improved process nor the new article is disclosed in his copending application, and it is believed that he is entitled to patent protection for his invention.

The Examiner's objection to claims 1 to 12 inclusive, namely, that to the priming coating in each of these claims is attributed certain functional capabilities while the secondary coating is defined in more or less precise chemical terminology, is not clear. Furthermore, it is not believed that it is necessary to set forth the relation between the "functional capability" of the first coating and the "chemical characteristics" of the second coating. Applicant has invented a new method involving the use of a coating having certain chemical characteristics, and it is believed that the characteristics of the preliminary coating may properly be described in physical terms. The second

coating necessarily has certain physical properties by virtue of its chemical characteristics.

The last paragraph of the Office letter is not understood. This paragraph reads as follows:-

"Claims 16 to 27 inclusive are drawn to the article. The claims are either the subject of division if a different invention or, as is more probable, simply the description of the article rather than the process and consequently not patentable over the process claims."

These claims are intended to be descriptive of the article and not of the process, and it is not understood how the Examiner arrives at the conclusion that the article claims are not patentable over the process claims because they are descriptive of the article rather than of the process. On the question of division between the process and the article claims, it is to be noted that the two sets of claims are closely related, and it is believed that they may properly be retained in the same application.

If the Examiner should again reject the claims on the references of record or should repeat any of the objections contained in the Office letter of May 8, 1912, he is requested to state his reasons for such rejection and objections more fully and precisely.

Reconsideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Dyer

His Attorney

Orange, New Jersey

May 5th, 1913.

HL-JS

Div. 15 Room 308

2-260

Paper No. 4

Address only
"The Commissioner of Patents,
Washington, D. C."

G. S. F.

B.

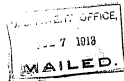
All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

July 7, 1913.

Frank L. Dyer.

Orange, N. J.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison serial No. #479,744 filed Feb. 24, 1912 for

insulating coatings for storage battery containers and other articles.

E. B. Moore

Commissioner of Patents.

6-5431

Responsive to letter filed May 6, 1913.

The claims are rejected on,

HARRISMAN #492,197 Feb. 21, 1893 (91-70) in view of applicants
allowed case serial No. #604,926. It is not believed to involve
invention to substitute for the "Asphalt Mastic" of this reference,
the halogen derivative of naphthalene which is covered in the said
allowed case.

Pat 1,083,354 Jan 6, 1914.

*604,926 - (Oct. 6, 1911)
allowed July 7/13*

Recd from Mr. Edison - Dec. 19, 1911
H. B.

Application for new coating
for Storage battery Cells
which consists of a
soft medium of asphaltic
nature dissolved in Petroleum
Benzine, & the battery cell
dipped in this replaces
any air on surface of
steel & on withdrawing from
liquid leaves a very
adherent coating of soft
insulating material not
attacked by strong acids
after drying & the benzine
is evaporated the cell
is then heated to $+30^{\circ}$ Fahr
& dipped in our tetrat -
+ then is ready for assembly

Recd from Mr. Edison - Dec. 18, 1911
2 H. B.

after cooling —
Without the preliminary
coating of soft asphaltic
like material the tetrat
was unable to strip off the
Coat but the preliminary coating
being of a sticky nature
being put on from a liquid
which displaced air on
the surface of the steel
it is very adhesive & cannot
be stripped off the steel —
The tetrat adheres perfectly
to this first coat & we
have a combination which
cannot strip —

Christenson has all
the facts —

BYERLEY AND SONS,

MANUFACTURERS OF

"BYERLYTE ASPHALTUM."

CLEVELAND, OHIO, Jan. 18, 1912

Mr. H.T. Leeming, Purch. Agt.,
Thomas A. Edison, Inc.,
Orange, N.J.

Dear Sir:

As per your request of the 16th we are enclosing
booklets on Byerlyte and its various uses.

Trust the same will prove interesting, we are

Yours very truly,
Byerley & Sons.

*Mr. Leeming
has you do
J.L. 1/18*

in Cannon's
 Berylite 2 1/2 pound to
 sample Berylite 1 gallon

has berylite mixed with mica, the
 old berylite is found in a stone
 containing it the stone when crushed is
 sandy for most of the stone is a fine grained
 rock on outside can be 4 wooden trays

2 pounds of 2" berylite stone
 6 " " berylite stone

Total weight
 220° F

Patent Series

Patent Application Files

Folio # 828 Storage Battery Systems

Serial #: 681101

Primary Applicant: Edison, Thomas A

Date Executed: 2/28/1912

Folio No. 628

Serial No. 681101

Applicant.

Address.

Thomas A. Edison

Llewellyn Park

West Orange, N.J.

Title Storage Battery Systems

Filed March 2nd, 1912

Examiner's Room No. 105

Assignee

Ass'g't Exec.

Recorded

Liber

Page

Patent No.

Issued

ACTIONS.

1. *applied June 21, 1912* 16 *copy & became master*
2. *Amended June 19, 1913* 17 *no amendment to be*
3. *Office letter Oct. 13, 1913* 18 *no answer. D. 21. 1913*
4. 19 *no answer. D. 21. 1913*
5. 20
6. 21
7. 22
8. 23
9. 24
10. 25
11. 26
12. 27
13. 28
14. 29
15. 30

VAULT

FRANK L. DYER,

Counsel,

Orange, New Jersey.

Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON
a citizen of the United States, residing and having a Post Office address at
Llewellyn Park, West Orange, Essex County, New Jersey

prays that letters patent may be granted to him for the improvements in

STORAGE BATTERY SYSTEMS

set forth in the annexed specification; and he hereby appoints Frank L. Dyer (Registration No. 560), of Orange, New Jersey, his attorney, with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent Office connected therewith.

Thos. A. Edison

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, Essex County, New Jersey, have invented certain new and useful improvements in STORAGE BATTERY SYSTEMS, of which the following is a description:-

My invention relates to electrical systems containing storage batteries, in which the battery charging current is derived from a generator driven by a prime mover liable to fluctuations in speed. My invention is particularly adapted for use upon automobiles driven by internal combustion engines or other motors, and when so used, the generator is driven by the prime mover of the automobile and is employed to charge a storage battery when desired, the said battery being used to supply current to lighting or other circuits. Among the objects of my invention is the provision of means for preventing variations beyond predetermined limits in the voltage impressed upon the storage battery when the same is being charged. My invention also comprises a simple and efficient method and means for supplying current at a substantially constant voltage to lamps upon a motor driven vehicle. Other objects of my invention will appear hereinafter.

In the drawings which accompany and form a part of this specification, and in which like reference charac-

ters are employed to designate like parts throughout the several views -

Figure 1 is an elevation showing an internal combustion engine provided with apparatus embodying certain features of my invention;

Figure 2 is a view, partly diagrammatic, of a system storage battery embodying my invention; and

Figure 3 is a view partly in section of one embodiment of my improved means for preventing variations beyond predetermined limits in the voltage impressed upon the storage battery.

Referring to the drawings, an internal combustion engine, which may be used to drive a vehicle, is shown at 1, and an electrical generator suitably supported is shown at 2. The generator 2 is driven from an auxiliary shaft 3 of the internal combustion engine 1 through pulleys 4 and 5 and the belt 6. The clutch 7, controlled by the rod 8, is provided for clutching and unlatching the pulley 4 to the auxiliary shaft 3. A storage battery 9 is connected to the generator 2 through the switch device 10. The device 10 comprises two slip rings or discs 12 and 13 fixedly secured to the shaft 11 of the generator 2 and insulated from each other by insulating material 14, and from the shaft 11 by an insulating sleeve 15. The device 10 comprises also a member 16 of conducting material shown as a disc and fixedly secured to the shaft 11 and insulated therefrom. Disc 16 is provided with two electrical contacts 17 and 18 insulated from the disc 16 by the insulating bushings 19 and 20 respectively. Contact 17 is connected to the slip ring or disc 12 by the conductor 21 and

the contact 10 is connected to the slip ring or disc 13 by the conductor 22. Two elongated members 23 and 24, of conducting material, are pivotally mounted upon the disc 16 upon conducting studs 25 and 26 respectively. The two members 23 and 24 are approximately parallel to each other, the free end of one being opposite the pivoted end of the other. The two members 23 and 24 are connected by means of the spring 27 tending to cause the said members to move toward each other. The spring 27 is connected to the member 23 near its pivot 25 in any suitable manner, as for example, by means of the projection 28. Spring 27 is connected to the member 24 near the free end thereof in any suitable manner, as for example, by a threaded member 30 extended through a projection 29 on the member 24 and having a nut 30', whereby the tension of the spring may be adjusted. The free end of the member 23 is adapted to contact with the contact 17 and the free end of the member 24 is adapted to contact with the contact 18. A back stop 31 is provided to limit the movement of the member 23 away from its contact 17 and towards the member 24, and a back stop 32 is provided to limit the movement of the member 24 away from its contact 18 and away from the member 23. Brushes 33 and 34 are provided to contact with the slip rings or discs 12 and 15 respectively. The brush 34 is connected to one terminal of the storage battery 9 by a conductor 35. The other terminal of the storage battery 9 is connected to one of the terminal brushes of the generator 2 by the conductor 36. Conductor 36 is provided with a switch 37 for connecting or disconnecting the charging cir-

quit to the battery. The other brush terminal of the generator 2 is connected to the brush 33 by the conductor 38. Conductors 39 and 40 lead from the terminals of the storage battery 9 and are adapted to have connected across them translating devices, such as the lamps 41 and the spark coil 42. A switch 43 is provided for controlling the lamp circuit 41, and a switch 44 is provided for controlling the spark coil circuit.

When it is desired to charge the battery 9, as for example, during the day time when the lamps are not in use, the switch 43 is opened, the switch 37 closed, and the pulley 4 clutched to the auxiliary shaft 3 by means of the clutch 7, which is operated by the rod 8. When the engine 1 is at rest, the pivoted members 23 and 24 have the positions shown in the drawing, and the circuit from the generator is interrupted at the contact 17. As the engine 1 speeds up, members 23 and 24 tend to move outwardly due to centrifugal action, and the apparatus is so adjusted that at a certain predetermined speed corresponding to the minimum voltage to be applied to the battery, the member 23 makes contact with the contact 17, the member 24 still remaining in contact with the contact 18. The circuit from the generator 2 may then be traced as follows:- Through the conductor 38, brush 33, slip ring or disc 12, conductor 21, contact 17, pivoted member 23, spring 27 and disc 16, pivoted member 24, contact 18, conductor 22, slip ring or disc 13, brush 34, conductor 35, storage battery 9, conductor 36, and back to the generator 2. When the speed of the engine 1 increases

to such an extent that the voltage of the generator 2 is greater than is desirable to be impressed upon the storage battery 9, the member 24 moves outwardly, breaking the charging circuit at the contact 16. The outward movement of the member 23 at a lower speed than the outward movement of the member 24 may be secured by having the two members 23 and 24 of similar size, shape and weight, and the distance between the point of attachment of the spring 27 to the member 23 and its pivot less than the distance between the point of attachment of the spring 27 to the member 24 and its pivot. Instead of providing for breaking the circuit at a predetermined increased speed, the belt 6 may be so arranged as to slip when this speed is reached, due to the increased load upon the generator at the high voltage then generated. When my invention is applied to an automobile, the switch 37 may be kept closed, and the switch 43 opened during the day time when the lights are not needed, and during the night and at all other times when lights are needed, the switch 37 may be opened and the switch 43 closed. In this manner, a source of constant potential is provided for feeding the lights. The spark coil 42 is, however, kept in circuit while the generator is running, the battery 9 tending to steady the voltage across the spark coil 42.

Having now described my invention, what I claim as new and desire to protect by Letters Patent is as follows:-

1. In apparatus of the class described, the combination of a prime mover liable to fluctuations in speed, a generator driven thereby, a storage battery, and means for maintaining the battery in electrical connection with the generator for speeds of the prime mover within predetermined limits, substantially as described.

STAN 1

2. In apparatus of the class described, a prime mover liable to fluctuations in speed, a generator driven thereby, a storage battery, and means for automatically connecting the battery to the generator when the prime mover attains a predetermined speed, substantially as described.

STAN 2

3. In apparatus of the class described, a prime mover liable to fluctuations in speed, a generator driven thereby, a storage battery, and means for automatically connecting the battery to the generator at a predetermined speed of the prime mover and for automatically disconnecting the same at a higher speed, substantially as described.

STAN 3

4. In apparatus of the class described, a prime mover liable to fluctuations in speed, a generator driven thereby, a storage battery, and centrifugally operated means for automatically connecting the battery to the generator when the prime mover attains a predetermined speed, substantially as described.

5. In apparatus of the class described, a prime mover liable to fluctuations in speed, a generator driven thereby, a storage battery, and centrifugally operated

means for connecting the battery to the generator at a predetermined speed of the prime mover and for automatically disconnecting the same at a higher speed, substantially as described.

Cancelled 1/16/60
5. In apparatus of the class described, a switch comprising a rotatable member, a pair of members pivotally mounted thereon, and resilient means connecting the two pivoted members, the said means being connected to the said members at different distances from the pivots, substantially as described.

7. In apparatus of the class described, a rotatable member, a pair of members pivotally mounted thereon, and a spring connecting the two pivoted members and tending to move them toward each other, the said spring being connected to the said members at different distances from the pivots, substantially as described.

8. In apparatus of the class described, a switch comprising a rotatable member, a pair of members pivotally mounted thereon, and an electrical contact for each of said members, said members being normally biased, one into contact with its contact and the other out of contact with its contact, substantially as described.

b.3 In apparatus of the class described, a variable speed generator, a storage battery, a charging circuit from the generator having therein means for automatically connecting the battery and generator during speeds between predetermined limits, a circuit containing translating devices adapted to be connected to the battery, means for connecting and disconnecting said charging circuit to and from the battery, and means for connecting and

disconnecting said translating devices to and from the battery, substantially as described.

7 ~~26~~. Means for supplying current at a substantially constant voltage to lamps upon a motor driven vehicle, comprising a generator driven by the driving motor of the vehicle, a storage battery, means for connecting the storage battery to the generator during periods of non-use of the lamps and at speeds of the motor within predetermined limits, and means for connecting the lamps to the storage battery during other periods, substantially as described.

8 ~~27~~. The method of supplying current at a substantially constant voltage to lamps upon a motor driven vehicle, which consists in charging a storage battery from a generator driven by the driving motor of the vehicle during periods of non-use of the lamps and at speeds of the motor between predetermined limits, and supplying current to the lamps from the battery during other periods, substantially as set forth.

This specification signed and witnessed this 28th day of February 1912—

Thos. A. Edison

Witnesseth:

1. Henry Lanahan
2. Anna P. Reicher

Oath.

State of New Jersey } ss.,
County of Essex

THOMAS A. EDISON, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of Llewellyn Park, West Orange, Essex County, New Jersey

that he verily believes himself to be the original, first and sole inventor of the improvements in

STORAGE BATTERY SYSTEMS

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

Thos. A. Edison

Sworn to and subscribed before me this 28th day of February 1912—

ANNA KLEHM
NOTARY PUBLIC, STATE OF NEW JERSEY
COMMISSION EXPIRES JULY 1912

Notary Public.

[Seal]

828

684,101
2.4.3

*Lanahan says
Medium should
be too heavy to write on this*
MRH
10/6/14

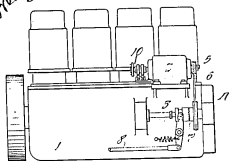


Fig. 2

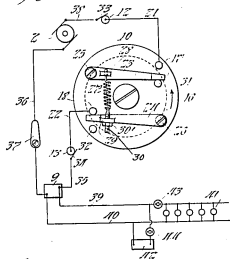
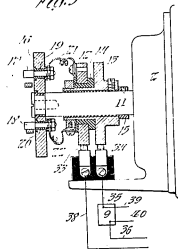


Fig. 3



Witnesses:

Frank O'Leary
Henry Lanahan

Inventor:

Charles A. Lanahan
Frank A. Lanahan
10/6/14

Johns only
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

626
DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON

June 21, 1912.

Thomas A. Madison,

C/o Frank L. Dyer,

Orange, New Jersey.



Please find below a communication from the EXAMINER in charge of your application,
for Storage Battery Systems, filed March 2, 1912, Serial No. 682,101.

E. B. Wilson

Commissioner of Patents.

The Drawing should indicate the Storage Battery in accordance with the conventional showing on the draftsman sheet opposite page 88, of the Rules of Practice.

The drawing should more clearly indicate that the part 42 represents a spark coil.

Division is required between Claims 1 to 5 inclusive, 9 and 10 which are drawn to a system of distribution, claims 6, 7 and 8 which covers specifically a centrifugal switch, and claim 11 which is drawn to a method independent of the specific system disclosed.

Further action on the merits is postponed until the above requirement shall have been complied with.

A cursory examination fails to disclose a reference for applicants specific system.

See by letter King 170 1009 548.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison
STORAGE BATTERY SYSTEMS
Filed March 2nd, 1912
Serial No. 681,101

Room No. 105.

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of June 21, 1912, please amend the above entitled case as follows:-

Cancel claims 6, 7 and 8.

Renumber claims 9, 10 and 11 as 6, 7 and 8 respectively.

R E M A R K S

The changes in the drawing required will be made before the application goes to patent.

Claims 6, 7 and 8 have been canceled in partial compliance with the requirement of division. Applicant reserves the right to file a divisional application covering the subject matter of these claims. The Examiner is requested to withdraw the requirement of division between claim 6, formerly claim 11, and the remaining claims of the application, for the reason that the method set forth in claim 6 is so related to the subject matter of the remaining claims (see particularly claim 7) that it is thought that all of the claims now submitted may be properly examined in the same application.

Action on the merits is requested.

Respectfully submitted,

Orange, N. J.
June 19, 1913

THOMAS A. EDISON

By Frank H. Myers
his attorney

HL-JS

Div. 24..... Room.....105

Address only
"The Commissioner of Patents,
Washington, D. C."

2-200

VOC

Paper No.....4

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

RM

WASHINGTON

October 13, 1913.

Frank L. Dyer.

Orange.

New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Serial No. 681,101, filed Mar. 2, 1912, for

Storage Battery Systems.

65-1011

Thomas Edison

Commissioner of Patents.

In response to amendment of June 20, 1913.

It is not clear in this case why the method and apparatus
are so inter-related that they combine in a single invention.
Applicant's attention is directed to the decisions in Re McMahon,
48 O. G., 255, and in Re Frasch, 122 O. G., 1048. The require-
ment for division between claims 1 to 7 on the one hand and claim
8 on the other hand is repeated and made final.

The following patents are cited:

Bennett, 589,112, Aug. 31, 1897, Systems, Car; and
Erben, 787,284, Switches, Automatic,
Centrifugal.

Recd from Mr. Edwin Dec. 18, 1911 H.B.

Application —
Storage battery on automobile

Small Dynamo run by belt
from shaft of automobile
+ a belt shifting device
so that Dynamos can be
run in daytime & charge
battery ready for the
night ^{light} & also for starting
days & nights =

Dynamos provided with
governors so when dynamo
gets night speed it auto connects
when it exceeds a certain
speed the governor cuts this

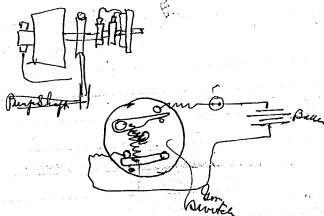
Recd from Mrs. Edwin - Dec. 8, 1911 A.B.

2

Letter is not really necessary
as sect would sleep —
See Bliss for details

2

RECEIVED



Patent Series

Patent Application Files

Folio # 829 Electrical Regulation

Serial #: 685206

Primary Applicant: Edison, Thomas A

Date Executed: 3/8/1912

Folio No. 529

Serial No. 885,206

Applicant.

Address.

Thomas A. Edison

Title Electrical Regulation

Filed March 21 1912

Examiner's Room No.

Assignee

Ass'g't Exec.

Recorded

Liber

Page

Patent No.

Issued

ACTIONS.

1	Office Letter Oct. 24-1912	16
2	Office " May 16-1913	17
3		18
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11		26
12		27
13		28
14		29
15		30

VAULT

FRANK L. DYER,

Counsel,

Orange, New Jersey.

Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON
a citizen of the United States, residing and having a Post Office address at
Llewellyn Park, West Orange, Essex County, New Jersey

prays that letters patent may be granted to him for the improvements in

ELECTRICAL REGULATION

set forth in the annexed specification; and he hereby appoints Frank L. Dyer
(Registration No. 560), of Orange, New Jersey, his attorney, with full
power of substitution and revocation, to prosecute this application, to make
alterations and amendments therein, to receive the patent, and to transact all
business in the Patent Office connected therewith.

Ths. A. Edison

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:-

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, Essex County, New Jersey, have invented certain new and useful improvements in ELECTRICAL REGULATION, of which the following is a description:-

My invention relates generally to a system of electrical regulation in which a source of current of non-constant voltage is used to supply current to translating devices requiring constant voltage. My invention is particularly adapted for use in lighting systems where the lamps are fed from storage batteries. A storage battery after being charged has an excess voltage at the beginning of the discharge, which is called the "gas voltage", and as the discharge continues, the voltage rapidly falls to the normal rate of discharge, and thereafter drops only slightly and at a uniform rate until the battery is almost completely discharged. My invention comprises sensitive and efficient means for maintaining a substantially constant voltage on the lamps or other translating devices fed from a storage battery or other source of current. My invention consists also in the details of construction and combinations of elements hereinafter described more fully and claimed.

In the drawings which accompany and form a part of this specification, and in which like reference characters are employed to designate like parts throughout the several views -

Figure 1 is a diagrammatic view of an electrical system containing an embodiment of my invention;

Figure 2 is a side view, partly in section of a relay adapted for use in my improved system;

Figure 3 is an end view of the same;

Figure 4 is a plan view below the line 4-4 of Fig. 2, showing the movable contact of the relay and a portion of its spring support;

Figure 5 is a sectional view of the armature of the relay taken on the line 5-5 of Figure 2; and

Figures 6 and 7 are side and plan views respectively of an electromagnetic circuit controlling device adapted for use in my improved system.

Referring to the drawings, at 1 is shown a storage battery or other suitable source of current, and at 2 lamps or other translating devices requiring current at substantially constant voltage and designed to be fed with current from the storage battery. The lamps 2 are connected directly across the mains 3 and 4. The main 4 is connected to one terminal of the storage battery, and the other terminal of the storage battery is connected to the main 3 through the conductor 5 and any suitable number of resistances R1, R2, R3, R4 and R5. Each of the resistances R1, R2, R3, R4 and R5 is provided with a by-pass circuit B1, B2, B3, B4 and B5 respectively. Each of these by-pass circuits contains a stationary contact and a movable contact co-operating therewith, the said contact forming a part of an electromagnetic circuit controlling device, the preferred form of which is illustrated more fully in Figures 6 and 7. Each of these circuit controll-

ing devices comprises an insulating base 10 having mounted thereon an L-shaped support 11, having a horizontal arm secured to the base 10, and a substantially vertical arm which serves to support at right angles to itself a pair of cores of magnetic material 12 and 13 provided with coils 14 and 15 respectively. The two coils 14 and 15 are connected in series and so wound that the adjacent ends of the cores 12 and 13 are of unlike polarity. A carbon contact 16 is mounted upon a support 17. The support 17 consists of an L-shaped member having a horizontal arm adjustably secured to the base 10, and a vertical arm carrying the carbon contact 16. The horizontal arm has a slot 25 therein through which is extended a threaded member 26 having a nut 27 for securing the support so as to properly adjust the contact 16 with reference to the contact 19. An armature 18 adapted to co-operate with the magnetic cores 12 and 13 is mounted upon a spring support of conducting material, such as sheet metal, and consisting of an upright portion 20 secured to the vertical arm of the support 11 by a screw 24, a horizontal portion 21 extending above the coils 14 and 15 and substantially parallel thereto, an upwardly extending loop portion 22, and a downwardly extending portion 23. The armature 18 is mounted on the side of the downwardly extending portion 23, which is adjacent to the cores 12 and 13. Upon the other side of the downwardly extending portion 23, a carbon contact 19 is mounted and is so located as to co-operate with the contact 16. The contacts 16 and 19 are normally in contact, being held in this position by virtue of the elasticity of the spring support of the contact 19. The

flexure of the spring support occurs chiefly in the loop portion 22 and in the downwardly extending portion 25, and by virtue of the loop, the flexure is distributed throughout a considerable length of the support, which contributes materially to the durability of the spring support. When the coils 14 and 15 are energized, the armature 18 is attracted by the cores 12 and 13 and the contacts 16 and 19 are separated. The screw 24 which serves to secure the spring support to the vertical portion of the frame 11 serves also as a means for connecting the contact 19 and its spring support in a circuit. The threaded member 26 is provided with a binding nut 28 for connecting the contact 16 in a circuit. A circuit controlling device, such as is illustrated in Figures 6 and 7, is provided for each of the by-pass circuits B1, B2, B3, B4 and B5, and these circuit controlling devices are shown diagrammatically at A1, A2, A4 and A5 in Figure 2. In Figure 2, however, each of these devices is shown as provided with a single actuating coil, which is the equivalent of the pair of actuating coils shown in Figures 4 and 5. Each of the by-pass circuits B1, B2, B3, B4 and B5 contains a pair of contacts 16 and 19 which are closed when the actuating coils of the circuit controlling devices are de-energized; and which are separated when the actuating coils are energized. The actuating coils for each of the circuit controlling devices A1, A2, A3, A4 and A5 are connected in circuit as follows:- One end of each coil (or pair of coils) is connected to a point in the battery through the conductor 5, and the other end of each coil or pair of coils is connected through a conducting wire D1, D2, D3, D4 or D5 to a fixed contact of a relay C1, C2, C3, C4 or C5.

one of which relays is provided for each of the devices A1, A2, A3, A4 and A5 respectively. The preferred form of relay is illustrated in Figures 2 and 3. This relay comprises an L-shaped frame 30 of magnetic material having a horizontal arm 60 and a shorter downwardly extending vertical arm 61. The horizontal arm 60 is provided with upwardly extending projections 32 and 33 by which the relay may be secured to the side of a vertical support, and with downwardly extending oppositely curved portions 34 and 35 which are adapted to partly encircle and hold in place a coil 36. An armature 37 of magnetic material is extended through the coil 36 and is mounted upon a horizontal pivot 38 attached to the downwardly extending arm 61 of the support 30. The armature 37 is made preferably hollow for the sake of lightness and is provided at its free end with a spring extension 39 of non-magnetic material carrying a contact 40. The spring extension may be made of thin sheet copper and is preferably looped as at 62 to afford greater flexibility and also at 63 to afford a convenient means for attaching the contact 40. The contact 40 may be an I-shaped member held in a slot 64 in the upper looped portion 62 of the spring support 39. The web of the I-shaped contact is slipped into the slot 64 and the two portions of the loop press against the flanges of the I-shaped contact and hold the same in place. A contact mounted in this manner may be easily removed and replaced. The free end of the armature 37 may be slotted for the reception of the non-contact-carrying end of the spring support 39, and the latter may be soldered or otherwise

secured in the slots. A contact 41 is provided in the horizontal portion 60 of the frame 30 and is located vertically above the contact 40 and adapted to contact therewith when the armature is in its upper or raised position. Contact 41 is insulated from the frame 30, and is carried by a threaded member 63 and locked in place by the nut 42. The threaded member 63 is provided with washers 44 and a nut 43 for connecting the contact 41 to a circuit. In the construction illustrated and described there is a slight rubbing between the contacts 40 and 41 whenever the circuit is made or broken, and the faces of the contacts are kept clean thereby. Armature 37 is also provided at its free end with a rod 45 of non-magnetic material, such as brass, extending therefrom and soldered or otherwise secured thereto. A weight 46 preferably of non-magnetic material, such as brass, is slidably mounted on the rod 45 and is provided with a set screw 65 for securing the weight in adjusted position. The circuit containing the contact 41 extends through the contact 40, when the latter is in closed position, the spring support 39, the armature 37, and the conductor 47, which may be soldered to the armature 37 preferably near its pivotal support. As a part of the magnetic circuit of the relay, a screw threaded member 48 of magnetic material is extended downwardly through the horizontal portion 60 of the frame 30 at the free end of the armature 37. The member 48 has a knurled head 48' to facilitate adjustment of the same. The member 48 has extended through it a screw threaded member 50 of non-magnetic material, the lower end of which serves as a stop to limit the upward movement of the armature 37, and to prevent the armature 37 from coming in

contact with the member 48 which would be liable to cause sticking. A nut 49 threaded upon the member 48 serves to lock the same in adjusted position, and the nut 51 threaded upon the member 50 serves to lock it in adjusted position. In order to limit the downward movement of the armature 37, a stop 52 is provided consisting of a threaded member extended vertically through the horizontal portion of a non-magnetic bracket 51 secured to the horizontal portion 60 of the frame 30 and having downwardly and horizontally extended portions. A nut 53 is provided for locking the stop 52 in adjusted position. The relay is capable of being so adjusted that for a predetermined strength of current through the coil 36, the armature 37 moves into its upper or raised position and the contacts 40 and 41 are closed, and when the strength of current decreases to a certain predetermined extent, the armature 37 drops into its lower position, due to its own gravity and that of the weight 46, and the circuit is opened at the contacts 40 and 41. The relay is adjusted to close the circuit for a predetermined strength of current and to open the circuit for a predetermined lesser strength of current chiefly by means of the adjustable weight 46, and to a less degree by the stops 50 and 52, and the adjustable portion 48 of the magnetic circuit. By screwing the magnetic member 48 into a position so that the gap between the free end of the armature 37 and the lower end of the member of magnetic material 48 is decreased, the armature will be moved into its upward position for a smaller current strength in the coil 36, and vice versa. By moving the weight 46 away from or

towards the free end of the armature, the armature may be caused to drop into its lower position for a lesser or greater current in the coil 36. Furthermore, upward adjustment of the stop 52 tends to cause the armature to move upward for a less current strength, and downward movement of the stop 50 tends to cause the armature to drop into its lower position at a greater current strength.

Referring (again) to Figure 2 of the drawings, the pivoted end of each of the armatures of the relays C1, C2, C3, C4 and C5 is connected to an intermediate point of the battery other than that to which the conductor 5 is connected, by a conductor 22, and the actuating coils 36 are connected in any suitable manner, as for example, all in parallel, or all in series, or in series-parallel, across the terminals of the battery 1, so that the current strength in each of the coils 36 varies as the voltage of the battery 1 varies. The relays are so adjusted that for the maximum voltage of the battery 1, i.e., when the battery has its maximum "gas voltage", the contacts 40 and 41 of the relays C1, C2, C3, C4 and C5 are closed. For this condition of affairs the actuating coils of the circuit controlling devices A1, A2, A3, A4 and A5 are all energized and the by-pass circuits B1, B2, B3, B4 and B5 are all broken, and consequently, all of the resistances R1, R2, R3, R4 and R5 are in circuit with the lamps. These resistances have such values as to reduce the voltage to the required voltage for the lamps 2. As the battery voltage drops to a predetermined value during discharge, the circuit of the relay C1 is opened at the contacts 40 and 41, causing the actuating coil of the circuit con-

trolling device A1 to be de-energized and the by-pass circuit B1 for the resistance R1 to be closed, thus cutting the resistance R1 out of circuit with the lamps. The remaining resistances have such values as to cause the proper voltage to be impressed upon the lamps. As the battery voltage drops still further, the relays C2, C3, C4 and C5 have their contacts successively opened, the actuating coils of the devices A2, A3, A4 and A5 are successively de-energized, the by-pass circuits B2, B3, B4 and B5 are successively closed, and the resistances R2, R3, R4 and R5 are successively cut out of circuit, maintaining the substantially constant required voltage, and finally leaving the lamps connected directly to the battery. The relays are so regulated that when the minimum voltage at which the battery is used to supply the lamps is reached, all of the resistances are cut out.

The relays C1, C2, C3, C4 and C5 may be adjusted to open the circuits of the devices A1, A2, A3, A4 and A5 at successively lower voltage of the battery by properly adjusting the weights W of the relays, the said weights being located at different distances from the free ends of the armatures, the said distance being greatest in the relay C1, and the distances becoming successively smaller in the relays C2, C3, C4 and C5.

Having now described my invention, what I claim as new therein and desire to protect by Letters Patent is as follows:-

- A 1. In a system of the class described, the combination of a source of current, translating devices fed therefrom, a plurality of resistances connected in circuit

between the source of current and the translating devices, and means responsive to changes in voltage of the source of current for short-circuiting one or more of said resistances, substantially as described.

A 2. In a system of the class described, the combination of a storage battery, lamps fed thereby, a plurality of resistances connected in circuit between the battery and the lamps, circuit controlling devices for the resistances, and relays for the circuit controlling devices, substantially as described.

C 3. In apparatus of the class described, a frame of magnetic material, an armature pivotally mounted thereon, a coil supported by the frame and surrounding the armature, said frame being provided with an adjustable portion of magnetic material forming a part of the magnetic circuit, substantially as described.

A 4. In a system of the class described, a variable voltage source of current, a relay having a coil carrying current proportional to the voltage of the source, and a movable element, the position of which is dependent upon the voltage of the source, substantially as described.

A 5. In a system of the class described, a variable voltage source of current, translating devices fed thereby, a resistance in circuit with the source and said devices, a by-pass circuit for the resistance, and means responsive to the voltage of the source for controlling the by-pass circuit, substantially as described.

C 6. In apparatus of the class described, a contact, a coil, a pivoted armature actuated thereby, a contact carried on the free end thereof, and adjustable means for causing the contacts to move into circuit closing position for predetermined current strengths in the coil, substantially as described.

C 7. In apparatus of the class described, a frame of magnetic material, an armature pivoted thereto, a member of magnetic material carried by the frame and adjustable with respect to the free end of the armature, and an adjustable member of non-magnetic material carried by the member of magnetic material and constituting a stop for the armature, substantially as described.

A 8. In a system of the class described, a variable voltage source of current, translating devices fed thereby, a plurality of resistances in circuit with the source and said devices, each of said resistances being provided with a by-pass circuit, and means responsive to the voltage of the source for controlling the by-pass circuits, substantially as described.

9. In apparatus of the class described, an electro-magnet having an armature, a looped spring support carrying the armature, a supporting frame to which the electro-magnet and looped spring support are secured, a contact fixedly secured to the armature, and an adjustable stationary contact co-operating therewith, substantially as described.

C 10. In apparatus of the class described, a frame of magnetic material, an armature pivotally mounted thereon, a coil surrounding the armature, and an adjustable weight for the armature whereby the apparatus may be so adjusted that movement of the armature will occur for a predetermined strength of current in the coil, substantially as described.

11. In apparatus of the class described, a frame of magnetic material having an adjustable portion, a pivotally mounted armature, a coil, the said frame and armature forming a magnetic circuit for the coil, an adjustable weight for the armature, a stationary contact, and a contact co-operating therewith and carried by the armature, substantially as described.

12. In apparatus of the class described, a frame of magnetic material having an adjustable portion, a pivotally mounted armature, a coil, the said frame and armature forming a magnetic circuit for the coil, an adjustable weight for the armature, adjustable stops for the armature, a stationary contact, and a contact co-operating therewith and carried by the armature, substantially as described.

This specification signed and witnessed this 8th day of March 1912

Thomas A. Edison

Witnesseth:

1. Henry Kanahon
2. Anna P. Keenan

Oath.

State of New Jersey } ss.,
County of Essex

THOMAS A. EDISON, the above named
petitioner, being duly sworn, deposes and says that he is a citizen of the United
States, and a resident of Llewellyn Park, West Orange, Essex County,
New Jersey

that he verily believes himself to be the original, first and sole inventor of the
improvements in

ELECTRICAL REGULATION

described and claimed in the annexed specification; that he does not know and
does not believe that the same was ever known or used before his invention or
discovery thereof; or patented or described in any printed publication in the
United States of America or any foreign country before his invention or
discovery thereof, or more than two years prior to this application; or patented
in any country foreign to the United States on an application filed more than
twelve months prior to this application; or in public use or on sale in the
United States for more than two years prior to this application; and that no
application for patent upon said invention has been filed by him or his legal
representatives or assigns in any foreign country.

Thomas A. Edison
Sworn to and subscribed before me this 8th day of March 1912

Anna P. Keenan
Notary Public.

[Seal]

685,206

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Fig. 2

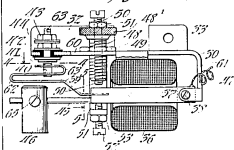


Fig. 3

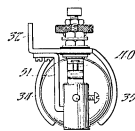


Fig. 4

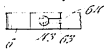


Fig. 5



Fig. 6

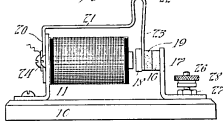
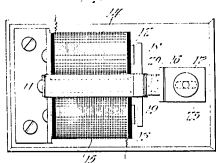


Fig. 7

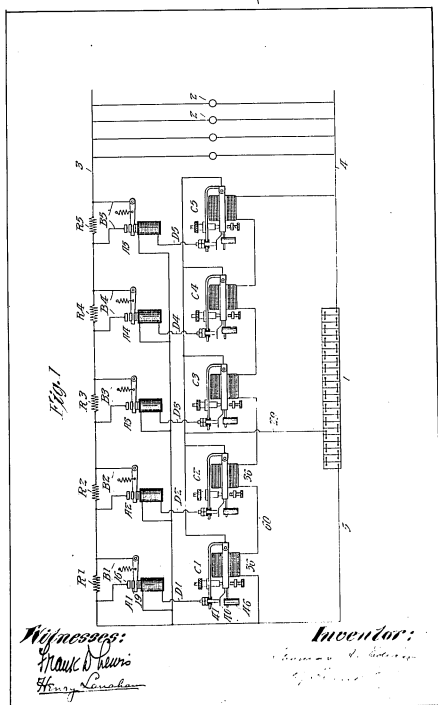


Witnesses:
Frank Lewis
Henry Lewis

Inventor:
Frank Lewis

629

685,206
2119



Witnesses:
Hank Davis
Henry K. K. K.

Inventor:
Hank Davis

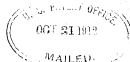
DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

October 21, 1912.

Thomas A. Edison,

c/o Frank L. Dyer,

Orange, N. J.



Please find below a communication from the EXAMINER in charge of your application.
for Electrical Regulation, filed Mar. 21, 1912, Serial No. 685,206.

4-5-2023

Commissioner of Patents.

Page 8, line 8, "2" should be 1.

Page 9, line 19, "voltage" should be voltages.

Prior to action on the merits division is required between
claims 1, 2, 4, 5 and 8, which cover a system of voltage regula-
tion, and claims 3, 6, 7 and 9, which cover a specific type of
electromagnetic switch capable of general application.

Division is also required between the switch claims, since
claim 9 is specific to the modification shown in Fig. 9, whereas
claims 3, 6, 7 and 10 are specific to the modification shown in
Fig. 2.

The following references are cited to assist applicant in
dividing:-

✓ Drum,	814,364, Mar. 6, 1906,	Systems, Car;
✓ Skeen,	608,721, Aug. 9, 1898,	" "
✓ Ungert,	953,104, Mar. 29, 1910,	" "
✓ Clarke,	986,526, Aug. 9, 1910,	Regulators Resistance;
✓ "	1,006,631, Aug. 24, 1911,	" "
✓ Cutler,	885,472, July 10, 1900,	" "
French patent to		
✓ Fauset,	377,428, Sep. 6, 1907,	" "
✓ Creveling,	644,409, Feb. 27, 1900,	Systems, Car;
✓ Bliss,	572,327, Dec. 8, 1896,	Regulators Resistance;
✓ Currie,	401,336, Apr. 16, 1899,	Switches, Electromagnetic;
✓ Cartwright,	618,512, Jan. 31, 1899,	" "
✓ Sprong,	856,741, June 11, 1907,	Regulators, Compounding Machines.

DIV. 26 Room 105

2-200

Paper No. 3

Attorney only
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

May 16, 1913.

Frank L. Dyer,

Orange,

New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Serial No. 685,206, filed Mar. 21, 1912, for
Electrical Regulation.

E. B. Moore

Commissioner of Patents.

c 6-2031

In view of a probable interference, applicant is required to
respond to the requirement for division made in the Office action
of ~~Nov. 21, 1912~~ ^{Oct. 21, 1912}, within thirty days, or on or before June 16,
1913, making an election as to the invention to be prosecuted in
this case.

Conference with Holden 6/11/13 - Decided to "stand fast"
HL

See patent No 1,070,099 - granted Aug 12, 1913
on application filed Apr 3, 1911.

Dec 27, 1911.

Operation of Voltage Regulator.

Battery consists of 24 Cells, when fully charged terminal C.M.F. is 36 V. Five or more relays are connected across the battery as shown by R1-2-3-4-5.

The circuits through M1-2-3-4-5 are kept closed as long as gas voltage remains at 36 V, holding out out-of-step keeping C.P. (line resistance) in circuit.

When battery voltage drops to 35, Line voltage drops to 29.

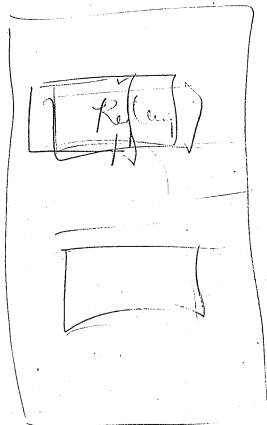
Relay R1 is adjusted to open the circuit through M1, when battery voltage drops to 35. C1 closes cutting out resistance L.R.1 raising Line voltage to 30.

When battery voltage drops to 34 Line voltage drops to 29.

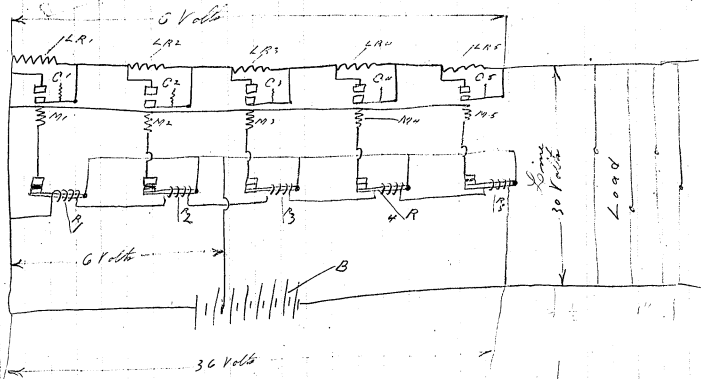
Relay R2 opens the circuit through M2, C2 closes cutting out L.R.2 raising Line voltage to 30.

Operation continues until all line resistance is cut out.

S.E.S.



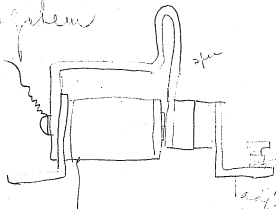
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Revised by Cum
Dec 27, 1911

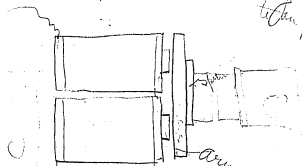
Voltage Regulator for
Ramsay Lo. System
Dec 27, 1911

System



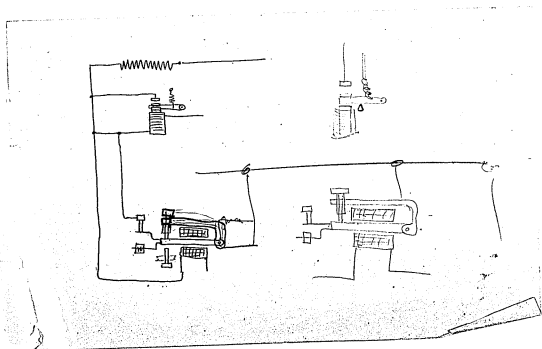
open

dog handle
to open from



Armature





F829

Conf with Mr. Langley June 14, 1913 -
System suggested by Mr. Edison
to Mr. Langley on Mr Edison's
return from Europe summer of 1911,
pay about (Sept? 1911)
Apparatus set up about Oct 1911
(Based on Langley's work on experiments)

System is two sunlamps to radiate
- apparatus would have to be placed
on solid floor, e.g. floor of cellar.

Patent Series

Patent Application Files

Folio # 831 Motor Vehicles

Serial #: 685542

Primary Applicant: Edison, Thomas A

Date Executed: 3/8/1912

Folio No. 181

Serial No. 685,542

Applicant.

Address.

Thomas A. Edison

Title Edison's Records

Filed March 20, 1912

Examiner's Room No.

Assignee

Ass't Exec.

Recorded

Liber

Page

Patent No.

Issued

ACTIONS.

- 1 Rejected May 22, 1911 16
- 2 Remanded Aug 4, 1913 17
- 3 Rejected July 17, 1913 18
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VAULT

Edison's Records
10/2
1914

FRANK L. DYER,

Counsel,

Orange, New Jersey.

Petition.

To the Commissioner of Patents:

Your Petitioner **THOMAS A. EDISON**
a citizen of the United States, residing and having a Post Office address at
Llewellyn Park, West Orange, Essex County, New Jersey

prays that letters patent may be granted to him for the improvements in

MOTOR VEHICLES

set forth in the annexed specification; and he hereby appoints Frank L. Dyer (Registration No. 560), of Orange, New Jersey, his attorney, with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent Office connected therewith.

Thos. A. Edison

S P E C I F I C A T I O N

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, Essex County, New Jersey, have invented certain new and useful improvements in MOTOR VEHICLES, of which the following is a specification:-

My invention relates generally to motor vehicles and more particularly to improvements in the running gear of such vehicles, whereby the construction of the same is facilitated and its durability is increased. One feature of my invention is a motor supporting frame adapted to be readily attached to the axles of vehicles of ordinary construction, and another feature is the provision of cushioning or shock-absorbing means for the motor and metal parts of the frame, so as to prevent crystallization of such parts due to shocks, and consequent fracturing. As a cushioning means, I prefer to use non-metallic elastic material, preferably fabric, such as felt-like material, canvas, or rubberized fabric. In my improved structure, the motor supporting frame is separated from the axles at all points by cushioning material, and the motor is separated from the frame by similar material. In this way the metal parts of the frame and particularly the motor are protected from shocks received by the wheels and axles. My invention includes also means for reinforcing and strengthening the vehicle structure. My invention consists furthermore in the combinations of parts and details of construction hereinafter described more fully and claimed.

In the drawings which accompany and form a part of this specification, and in which like reference characters are employed to designate like parts throughout the several views -

Figure 1 is a plan view of a motor vehicle embodying my invention with the body removed;

Figure 2 is a vertical section on the line 2-2 of Figure 1;

Figure 3 is an enlarged vertical section on the line 3-3 of Figure 1; and

Figure 4 is a vertical elevation showing a portion of the rear axle of the vehicle and means for attaching the frame thereto.

Referring to the drawings, at 10 and 11 respectively are shown front and rear axles of a vehicle of ordinary construction. The front axle 10 includes an iron or steel portion 12 and a wooden stiffening member 13, and the rear axle 11 includes an iron or steel portion 14 and a wooden stiffening portion 15. The front vehicle wheels are shown at 16 and 17, and the rear vehicle wheels at 18 and 19. Means for steering the vehicle is shown at 20.

The frame for coupling together the front and rear axles and for supporting the motor consists of side members 21 and 22 and cross members 23, 24 and 25, all of iron or steel shapes, preferably angles. ^{Back} Each of the side members 21 and 22 are bent inwardly and connected together at their forward ends by being riveted or welded to a member 26, which is preferably an iron or steel casting. The ends of the cross member 23 are secured to the

side members 21 and 22 near their rear ends, but in front of the rear axle, by riveting or welding. The ends of the cross members 24 and 25 respectively are secured to the side members 21 and 22 intermediate the ends thereof. The main portion of the frame consists of the side members 21 and 22 and the cross members 23, 24 and 25. Additional stiffening and reinforcing members may be provided, such as the member 58, which connects the members 25 and 21. A block 27, preferably of iron or steel, is secured to the under side of the central portion of the front axle 10 by clips 28. The block 27 has a horizontal opening therethrough extending at right angles to the axle, and in the opening a bushing 29 is secured. A horizontal pin or bolt 30 is extended through the member 26 and the block 27 and serves to connect the frame to the front axle. A nut 31 and washers 32 are provided for the ^{top of} bolt. By this construction, the axle has freedom of movement relative to the frame around the axis of the bolt, and strains in the frame structure due to inequalities in the roadway are avoided. Elastic material 33, such as felt-like material, canvas, or rubberized fabric, is placed between the metal block 27 and the iron or steel axle 12, and between the cross pieces 34 of the clips 28 and the wooden portion 13 of the axle, in order to prevent crystallization of the metal parts due to the shocks to which they are continually subjected when the vehicle is in use. Such crystallization is liable to cause fracture of the parts.

In order to secure the frame to the rear axle, the following construction is employed:- A member 40, preferably an iron or steel casting, is provided for each

of the rear ends of the side members 21 and 22. Each of the castings 40 is adapted to be secured in place under the rear axle by clips 41, 42 and 43. The clip 41 passes under and in engagement with an extension 44 of the casting. The extension 44 is parallel to the axle and has a groove in its under side for the reception of the clip 41. The clip 43 passes over the wooden portion 16 of the rear axle and is ^{secured to} ~~threaded into~~ lugs 45 integral with the casting 40. The clip 43 has nuts 46 for securing the casting in place. Each casting 40 has an opening there-through which is preferably rectangular and extends at right angles to the rear axle. The rear end of one of the side members 21 and 22 is extended through the opening of each casting. In Figure 4 the rear end of the side member 22 is shown extended through the opening, and the rear end of the side member 22 may be reinforced by a piece of the same shape and material riveted thereto, as shown in this figure. A block of metal 47 is also extended through the opening and assists in holding the side member 22 in place. The block 47 rests on the bottom of the rectangular opening of the casting 40. On the top of the block elastic material 48 of the character hereinbefore described is placed to prevent crystallization in the metal parts due to shocks. The horizontal flange of the angle-shaped side member 22 rests on the elastic material 48, and the vertical flange extends between the side of the block 47 and a vertical wall of the rectangular opening in the casting 40. Upon the horizontal flange of the side member 22 is placed elastic material 49 of the charac-

ter hereinbefore described. Bearing members 50 and 51 rest upon the elastic material 49, and clips 52 and 53 pass over the bearing members and around the side member 22 and block 47, and are secured by nuts to rearwardly and forwardly extending lugs 54 and 55 integral with the casting 40. The side member 22 is secured in the casting 40 by the clips 52 and 53, and the side member 21 is secured in its casting in a similar manner. The clip 42 extends around the bottom of the casting 40 in a groove therein and passes through openings in the horizontal flange of the side member 22. The clips 41 and 42 are secured by nuts in the bearing member 56 resting upon the lower sheaf of springs 57. Thus, the ^{side} clips 41 and 42 serve to secure the rear springs and axle together as well as aiding to clamp the frame in place. The clip 42 is put in place after the rear end of the side member 22 has been extended through the opening in the casting 40. The structure for connecting the rear end of the side member 21 to the rear axle is the same as that for connecting the rear end of the side member 22 to the axle.

Upon the frame is mounted an electric motor 60 by means of brackets 61 and 62 attached to the cross members 23 and 24. Cushions of elastic material 39 of the character hereinbefore described separate the brackets 61 and 62 from the cross members 23 and 24. A counter-shaft 63 is also mounted on the brackets 55, 36 and 37 secured to the frame so as to be adjustable in position to regulate the tension of the chain drives 54 and 55. The bracket 36 is mounted on a member 34 ^{36a 37a} connecting the cross

members 24 and 25. Cushions of elastic material 38 of the character hereinbefore described separate the brackets 35, 36 and 37 from the frame at all points. Power from the motor is transmitted from the motor through the chain drives 64 and 65 to the rear wheels 18 and 19.

Reinforcing means for strengthening the front axle may be provided, consisting of a tension rod 70 having its ends secured to lugs 71 which are attached by screws or bolts 72 to the forward side of the front axle 10 at points substantially equidistant from the middle of the axle, the said rod extending in a groove around the forward face of a thrust block 73 which is located between the front portions of the clips 20 and held against lateral movement thereby. The block 73 is pressed against the iron portion 12 of the front axle by the tension rod 70. A turn buckle 74 is provided for adjusting the tension of the rod 70. This reinforcing means serves to strengthen the front axle against shocks produced by obstacles encountered in the roadway by the front wheels in the forward movement of the vehicle.

As an additional stiffening means for the structure, I may provide a pair of tension rods 75 extending from the front portion of the vehicle to the rear axle. Each of the rods 75 is secured at its forward end to a plate 76 held between a block 78 on the front spring and the vehicle body 79 by bolts 77, and is secured to the rear axle by a plate 80 secured to the under side of the rear axle by clips 81. A turn buckle 82 may be provided in each of the rods 75 for adjusting its tension. In this manner

the structure is stiffened and strengthened against shocks due to inequalities in the roadway and to starting and stopping the vehicle. Furthermore, the tension rods ²⁰ ~~25~~ permit the front axle to turn about the pin or bolt ³⁰ without distorting the structure.

Having now described my invention, what I claim and desire to secure by Letters Patent of the United States is as follows:-

1. In a motor vehicle, a unitary motor-supporting and axle-coupling frame adapted to be secured to the front and rear axles of a vehicle, substantially as described.
2. In a motor vehicle, a unitary motor-supporting and axle-coupling frame of iron or steel adapted to be secured to the front and rear axles of a vehicle, substantially as described.
3. In a motor vehicle, a unitary motor-supporting and axle-coupling frame adapted to be secured to the front and rear axles of a vehicle, and means for readily securing the frame to the said axles, substantially as described.
4. In a motor vehicle, a unitary motor-supporting and axle-coupling frame of iron or steel adapted to be secured to the front and rear axles of a vehicle, and means for readily securing the frame to the said axles, substantially as described.

Cancelled 4/9/33
5. In a motor vehicle, a unitary motor-supporting and axle-coupling frame, and means for securing the frame in fixed relation to the rear axle and in movable relation to the front axle, substantially as described.

6. In a motor vehicle, a unitary motor-supporting and axle-coupling frame of iron or steel, and means for securing the frame in fixed relation to the rear axle and in movable relation to the front axle, substantially as described.

Cancelled 4/15/34
7. In a motor vehicle, a motor-supporting and axle-coupling frame of metallic members and adapted to be secured to the front and rear axles of a vehicle, and non-metallic cushioning means for reducing the tendency to crystallization of the said members due to shocks, substantially as described.

at this point 2/11/33
8. In a motor vehicle, a frame secured to the axles of the vehicle and separated therefrom by non-metallic elastic material, and a motor and power transmitting mechanism mounted on the frame and separated therefrom by non-metallic elastic material, substantially as described.

at this point 2/11/33
9. In a motor vehicle, a frame secured to the axles of the vehicle and separated therefrom by elastic fabric, and a motor and power transmitting mechanism mounted on the frame and separated therefrom by elastic fabric, substantially as described.

Cancelled 4/10/33
10. In a motor vehicle, reinforcing means for the axle comprising a thrust block located substantially at the middle of the forward side of the axle, a tension rod extended over the forward side of the block, and means

Continued 2/19/44
for securing the ends of the tension rod to the axle,
substantially as described.

11. In a motor vehicle, reinforcing means for the
axle comprising a thrust block located substantially at
the middle of the forward side of the axle, a tension rod
extended over the forward side of the block, and lugs se-
cured to the ends of the tension rod and to the axle,
substantially as described.

12. In a motor vehicle, the combination of front
and rear axles, ^{a body 7/5/44} ~~spring~~ carried thereby, a frame connecting
the axles, and tension rods secured to the rear axle and to
the forward portion of the ^{body 7/5/44} ~~vehicle~~ above the front spring,
substantially as described.

13. In a motor vehicle, the combination of front
and rear axles, ^{7/5/44} ~~spring~~ and a body mounted thereon, a frame
fixedly secured to the rear axle and ^{1/5/44} ~~fixedly~~ secured to
the front axle, and a tension rod ^{Insert 2 7/5/44} ~~connecting~~ the rear axle
with the forward part of the body, substantially as de-
scribed.

14. In a motor vehicle, the combination of front
and rear axles, ^{7/5/44} ~~spring~~ and a body mounted thereon, a frame
fixedly secured to the rear axle and pivotally secured to
the front axle, and tension rods ^{Insert 2 7/5/44} ~~connecting~~ the rear axle
with the forward part of the body, substantially as de-
scribed.

Insert 2 - Claims 7, 8, 9 and 10 2/11/44
Insert B2 " 627 7/5/44

This specification signed and witnessed this 5th day of March 1912

Witnesseth:

Thos. R. Edison

1. Henry L. Latham
2. Anna P. Klehm

Oath.

State of New Jersey } ss.,
County of Essex

THOMAS A. EDISON, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of Llewellyn Park, West Orange, Essex County, New Jersey

that he verily believes himself to be the original, first and sole inventor of the improvements in

MOTOR VEHICLES

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

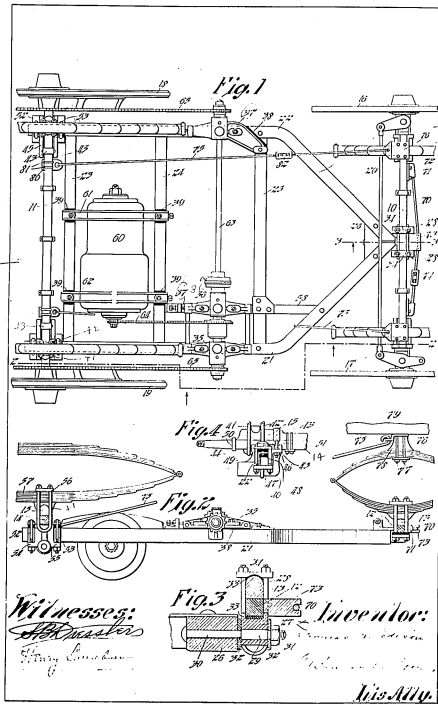
Thos. R. Edison
Sworn to and subscribed before me this 5th day of March 1912

[Seal]

ANNA P. KLEHM
NOTARY PUBLIC, STATE OF NEW JERSEY
COMMISSION EXPIRES JUNE 1915
Notary Public.

431

686; 542



Div. X ROOM 235
Address only
"The Commissioner of Patents,
Washington, D. C."

2-280

(B)

Paper No. 2

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

May 22, 1912.

U. S. PATENT OFFICE.

Thomas A. Edison,

care Frank L. Dyer,

Orange, N. J.

831

MAY 22 1912

DIV. X.

MAILED

Please find below a communication from the EXAMINER in charge of your application.

for Motor Vehicles, filed March 22, 1912, #685,542.

E. B. Moore

Commissioner of Patents.

✓ Page 3, line 16, bolt is misspelled. Is clip 45 "threaded"
into lugs 45, as stated on page 4, lines 7 and 8?

The reference numeral 37 is used at bottom of page 5, and
on the drawing to designate two unlike parts.

The following references are cited:

Millard, 712,829, Nov. 4, 1902, Motor Vehicles,
Greuter, 687,744, Dec. 3, 1901, "
Pearson, 641,404, Jan. 16, 1900, "
Clark, 672,030, April 16, 1901, "
Lockwood, 568,779, Oct. 6, 1896, (X) Motor Vehicles, (Electric)

Claims 1 to 8, inclusive, are rejected on Millard, cited.

The frame C carrying the motor is connected to the front and rear
axles with rubber cushions interposed between said axles and frame.

Claim 9 is not patentable over Millard, taken with Clark.

The former patent shows the resiliently supported frame,
and the latter patent the resiliently supported motor. To combine
these two supports for the motor would produce no new or different
result and would not involve invention.

The patent to Lockwood, cited, shows that it is not unusual
in the art to place cushions between the motor and its supporting
frame.

Claims 10 and 11 are not thought to be patentable over
Millard. It is not seen that there would be invention in placing
the truss brace h on the front side of the axle if the axle required
a brace in this position.

Claims 12, 13, and 14 are rejected on Pearson, cited.

Exr. Div. X.

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON,)
MOTOR VEHICLES,) Room No. 235.
Filed March 22, 1912,)
Serial No. 665,542.)

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to the Office action of
May 22, 1912, please amend the above entitled case as
follows:

Page 2, line 25, cancel "Each" and insert

- Both - -

Page 3, line 16, change "bolt" to - bolt - -

Page 4, line 8, cancel "threaded into"

and insert - secured to - -

Page 5, line 13, change "slips" to - clips -
same page, last line, change "37" to - 36a - -

Page 7, line 3, change "82" to - 75 - -

Claim 7, line 2, cancel "and adapted to be",
line 3, change "a" to - the - , and after "and" second
occurrence, insert - separated therefrom at all points by - -

Claims 8 and 9, line 2, after "therefrom"

insert - at all points - -

Claim 12, line 3, and claim 14, line 4,

after "rod" insert - directly - -

Claim 13, line 4, after "rod" insert - direct-

ly - -

Cancel claims 1 to 6 and 10 and 11.

Renumber claims 7, 8, 9, 12, 13 and 14 as

1 to 6.

Add the following claims:

Cancelled 7/15/17
7. In a motor vehicle, a frame secured to the axles of the vehicle, and a motor and power transmitting mechanism mounted on the frame and separated therefrom by non-metallic elastic material, substantially as described.

8. In a motor vehicle, a frame secured to the axles of the vehicle, and a motor and power transmitting mechanism mounted on the frame and separated therefrom by elastic fabric, substantially as described.

9.4
9. In a motor vehicle, the combination of front and rear axles, springs, and a body mounted thereon, a frame fixedly secured to the rear axle and having a single horizontal pivotal connection with the front axle and a tension rod directly connecting the rear axle with the forward part of the body, substantially as described.

10.5
10. In a motor vehicle, the combination of front and rear axles, springs, and a body mounted thereon, a frame fixedly secured to the rear axle and having a single horizontal pivotal connection with the front axle, and tension rods directly connecting the rear axle with the forward part of the body, substantially as described.

REMARKS

The Examiner is requested to kindly change reference character 37 designating the member on which bracket 36 is mounted to 36a.

Applicant is aware that it is customary to mount the motor of a vehicle upon the vehicle frame by means of metallic springs as shown in the references

Clark and Lockwood. While such a mounting is doubtless advantageous in that the motor will be prevented from partaking of all the jolts and other movements of the vehicle frame resulting from unevenness in the roadway, I have discovered that, where the connections between metallic structures, such as the axles and frame and the frame and motor of a vehicle are of metal, even when these connections take the form of springs, the shocks received by the wheels and axles of the vehicle act through the metal connections to cause molecular displacement of the material of the frame and motor and result, in the crystallization of the parts and consequent fracture. In my improved structure, the motor supporting frame is separated from the axles at all points by non-metallic cushioning material such as canvas or rubberized fabric, and the motor is separated from the frame by similar material. While Millard discloses cushioning means between the frame C and the front and rear axles, he also discloses rigid connections H between the frame C and the rear axle, which connections are entirely of metal. ^{to separate the frame C from the rear axle} Consequently, shocks received by the rear axle of Millard's vehicle would be communicated through the connections H to the frame C and cause crystallization of the latter. Moreover, Millard provides no cushioning means between the motor and the axle coupling frame C. Nor does any of the references disclose non-metallic cushioning means between the motor and the vehicle frame. By the employment of non-metallic cushioning means between the axles of the vehicle and the axle coupling frame and between the axle coupling frame and the motor, applicant does produce a new and useful result, namely, the prevention of crystallization of the parts of the axle coupling frame and the motor which would otherwise result from

the shocks received by the axles of the vehicle.

Claims 1, 2 and 3 specify that the frame secured to the front and rear axles of the vehicle is separated at all points therefrom by non-metallic cushioning means or elastic fabric. Claims 2 and 3 also specify, as do new claims 7 and 8, that the motor and power transmitting mechanism is mounted on the frame secured to the axles of the vehicle and is separated therefrom by non-metallic elastic material or by elastic fabric.

Claims 4, 5, 6, 9 and 10 specify that a tension rod or tension rods are directly secured to the rear axle and to the forward part of the vehicle or body. In Pearson's device, the truss rods P are not directly connected to the rear axle, but are connected at one end to the body of the vehicle and at the other end to the axle coupling frame C. Rods P, therefore, will impose stress on the axle coupling frame C, whereas in applicant's device, the tension rods relieve the axle coupling frame from more or less strain to which the frame would otherwise be subjected by shocks due to inequalities in the roadway and to the starting and stopping of the vehicle, and divide the strain between the vehicle body and the rear axle.

Claims 5, 6, 9 and 10 further specify that the frame secured to the rear axle is pivotally secured to the front axle or has a single horizontal pivotal connection therewith. The connection of the tension rod or rods with the vehicle body and the rear axle in the construction called for by these claims permit the front axle to turn freely about its pivotal connection with the axle coupling frame without distorting the latter, which would not be the case in the construction disclosed by Pearson. It is

obvious that by the arrangement of the tension rod or rods as set forth in claims 5, 6, 9 and 10, the axle coupling frame may be made much lighter than would be necessary in Pearson's device to secure the same degree of safety.

For the above reasons, further consideration and allowance of the claims as now presented are requested.

Respectfully submitted,

THOMAS A. EDISON,

By Frank L. Rogers
his Attorney.

Orange, New Jersey,

May 9 1913.

WAH-KHX

Div. X Room 256

Address only
The Commissioner of Patents,
Washington, D. C.

2-200

(B)

Paper No. 4

All communications regarding this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

July 17, 1913.

U. S. PATENT OFFICE,

JUL 17 1913

DIV. X.

MAILED

Frank L. Dyor,

Orange, N. J.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, for Motor Vehicles, filed March 22, 1912.

#685,542.

4-2001

E. B. Moore

Commissioner of Patents.

Amended May 10, 1913.

The following additional references are cited:

French patent to Paulain, 381,959, January 25, 1908, Motor Vehicles,
" " " Gautier, 8084, (1st Add. to 370,367), Jan. 8,
1908, Motor Vehicles, (Frames).

Claim 1 is rejected on Millard of record. The mere fact that the patentee pivots bolts a^5 to the bands F, G, and secures these bolts to the axle, does not interfere with the function of the rubber blocks z . It is not seen how applicant can insist on such a distinction when his own device shows a metallic contact between the side of the axle and block 27.

Claims 2, 3, 7, and 8 are rejected on Millard, in view of French patent to Gautier. The latter patent shows rubber cushions between the motor frame and the main frame, while Millard shows the cushions between the axles and main frame. It is not seen that any invention is involved in mounting a motor on the Millard frame with cushions between the motor and frame in view of Gautier.

Claims 4, 5, and 6 are not considered patentable over Pearson of record. It is not believed that there is invention in connecting rods F to the rear axle instead of to the frame G near the

#685,542-----2.

axle. The frame C is braced by rods C³, and it is not thought the function of the device would not be materially different whether the braces P are attached directly to the axle or to the frame in proximity to the axle. The frame C is pivoted to one of the axles as called for in claims 5 and 6.

Exr. Div. X.

X

IN THE UNITED STATES PATENT OFFICE

THOMAS A. EDISON,
MOTOR VEHICLES,
Filed March 22, 1912,
Serial No. 685,542.

Room No. 235

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of July 17, 1913, please amend the above entitled case as follows:

Claim 4, line 2, cancel "springs" and insert - a body -; line 4, cancel "vehicle" and insert - body -.

Claim 5, line 2, cancel "springs and"; line 3, cancel "pivotally", line 4, after "axle" first occurrence insert - so as to permit relative tilting movement of the latter and said frame -.

Claim 6, line 2, cancel "springs and", line 4, after "axle" first occurrence, insert - so as to permit relative tilting movement of the latter and said frame -.

Cancel claims 1, 2, 3, 7, and 8.

Renumber claims 4, 5, 6, 9 and 10 as 1, 2, 3, 4 and 5 respectively.

Add the following claims:

6. In a vehicle, the combination of front and rear axles, a body mounted thereon, a frame secured to the rear axle and having a connection with the front axle permitting movement of the latter with respect to said frame about an axis substantially at right angles to the said front axle, and a tension rod directly connecting the rear axle with the forward part of the body, substantially as described.

7. In a vehicle, the combination of front and rear axles, a body mounted thereon, a frame secured to the rear axle and having a connection with the front axle permitting

movement of the latter with respect to said frame about a horizontal axis substantially at right angles to the said front axle, and tension rods directly connected to the rear axle with the forward part of the body, substantially as described.

REMARKS

It is submitted that claim 1 (former claim 4) clearly and patentably distinguishes from Pearson of record. Pearson, in lines 82 to 88, page 1 of his patent states that the front of the carriage body is connected indirectly to the rear axle B by means of rods P, the rear ends of the latter being connected to the axle-frame rods C, C (and by them to the rear axle). The construction set forth in this claim is especially adapted for a vehicle wherein the front axle may tilt freely with respect to the axle-coupling frame about a horizontal axis without distorting such frame and without imposing stress thereon, while at the same time the vehicle structure is stiffened and strengthened against shocks due to inequalities in the roadway and to starting and stopping of the vehicle by means, such as the tension rods described in the claim. The construction disclosed in Pearson is obviously not adapted for a vehicle of this type for in case of the tilting of the front axle of Pearson's device strains would be imposed on the axle-coupling frame C through the truss rods P and the frame C would oppose such tilting movement. Moreover, the construction called for in the claim has the further advantage over Pearson of dividing more or less of the strains to which the vehicle structure is subjected between the vehicle body and the rear axle and relieving such strains from the axle-coupling frame as

was clearly brought out in the remarks on page 4 of the amendment of May 10, 1913.

While it is believed that claims 2 and 3 (former claims 5 and 6) clearly distinguish from Pearson as presented in the last amendment, these claims as amended still further differentiate from this reference by specifying that the frame is secured or pivotally secured to the front axle so as to permit relative tilting movement of the latter and said frame. This feature is not disclosed in Pearson.

New claims 6 and 7 presented herewith are drawn along the lines of allowed claims 4 and 5 respectively. These claims clearly differentiate from Pearson for reasons similar to those set forth on pages 4 and 5 of the amendment of May 10, 1913 in connection with claims 4 and 5 (former claims 9 and 10), and are thought necessary in order to adequately protect applicant in his invention.

For the reasons above set forth further consideration and allowance of the claims are respectfully requested.

Respectfully submitted,

THOMAS A. EDISON,

By Frank L. Myers

his Attorney.

Orange, New Jersey,

July 15 1914.

WAH-KOK

Div. X Room 235

The Commissioner of Patents,
Washington, D. C.,
and not any official by name.

2-200

(D)

Paper No. 6

All communications respecting this
application should give the serial number,
date of filing, title of invention, and
name of the applicant.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON

August 27, 1914.

U. S. PATENT OFFICE

Frank I. Dyer,

Orange,

New Jersey.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Mason, for Motor Vehicles, filed March 22, 1912,

#695,542.

45-201

Thomas A. Mason
Commissioner of Patents

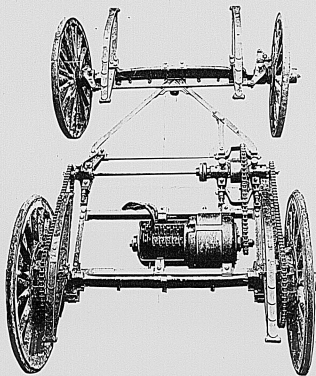
Amended July 16, 1914.

The statement of invention is not commensurate with
the claims now in the case.

Claim 1, (former 4) is not patentable over Pearson of
record. The braces P perform substantially the same function
as applicant's braces, and the fact that they are connected
to frame C a short distance from the axle would not interfere
with the rocking action of the frame. It will also be noted
that in Millard of record the frame C is rigidly secured to
the rear axle and pivotally secured to the front axle, and the
braces R correspond to applicant's braces 7B and have the
same function. Patent to Mason, 375,826, Jan. 3, 1888, Cl. 21-
105, and also Marks, 168,956, Jan. 19, 1875, same class, show
that it is old to extend a bracket from the rear axle to
the body above the front axle or spring. It is believed
that all the claims are substantially anticipated by
Millard especially in view of Mason and Marks, cited.

Exr. Div. X.

[PHOTOCOPY]



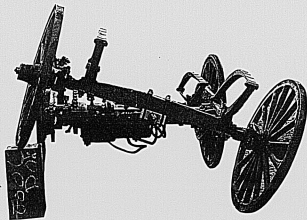
Pat. 11
Buckley & Co.
Nov 22 1911

[PHOTOCOPY]

Received from Mr. Clinton, Nov 22, 19

112

[PHOTOCOPY]



Opinion of the
author

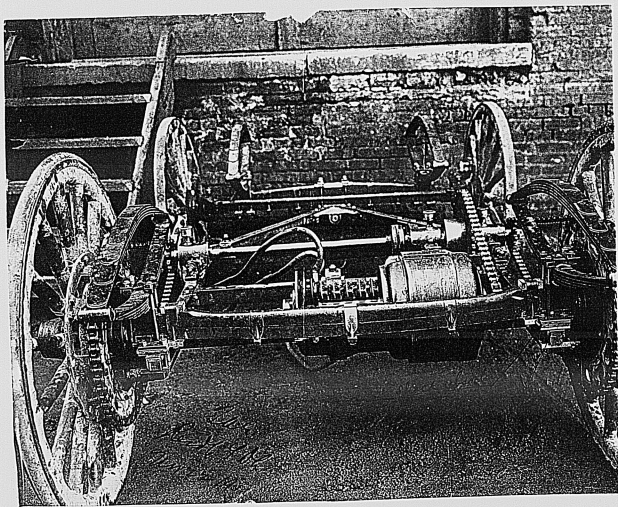
Action of front wheels
does not affect the
chassis.

[PHOTOCOPY]

Received from Mr. Edison, Nov. 22, 1911

HE

[PHOTOCOPY]



[PHOTOCOPY]

Receipt from Mr. Edison, ~~Nov~~
Nov 12, 1911
H.C.

2/17/12- Application submitted
to Mr. Edison, who stated that
a tuss-rod was now being
used which he desired to
have shown in dig.

Turned dig over to Lewis
for tuss-rod - See Ohio
HS

Patent Series

Patent Application Files

Folio # 833 Recording and Reproducing Combined Aural and Optical Impressions

Serial #: 687967

Primary Applicant: Higham, Daniel

Date Executed: 4/1/1912

Applicant.

Daniel H. H. H.

Address.

43 East 27th St.
New York City

Title ~~Method of Synchronously Recording and Reproducing~~
~~Optical Impressions and Sound Associated therewith~~
~~Combined aural and~~
 Filed April 2, 1912

Examiner's Room No.

Assignee

Ass'g't Exec.

Recorded

Liber

Page

Patent No.

Abandoned - Issued Sept. 29, 1917

ACTIONS.

1. Rejected Oct. 8, 1912 16

2. Amended Sept. 23/13 17

3. Rejected Oct. 24, 1913 18

4. Amended Oct. 6, 1914 19

5. Rejected Oct. 29, 1914 20

6. Amended Sept. 11, 1915 21

7. Rejected October 21, 1915 22

8. Amended Oct. 10, 1916 23

Final Rejection Oct. 24, 1916 24

Associate Power of Atty to 25

Wyer & Holden - Jan'y 1917 26

19 27

18 28

14 29

15 30

Wyer & Holden, Att'ys
 FRANK L. DYER, *Wyer*

Counsel,
 Orange, New Jersey.

Petition.

To the Commissioner of Patents:

Your Petitioner DANIEL HIGHAM,
a citizen of the United States, residing and having a Post Office address at
#43 East 27th Street, New York, County of New York and State of
New York

prays that letters patent may be granted to him for the improvements in

combined and
- METHODS OF SYNCHRONOUSLY RECORDING AND REPRODUCING OPTICAL
IMPRESSIONS AND SOUNDING ASSOCIATED THEREWITH -

set forth in the annexed specification; and he hereby appoints Frank L. Dyer
(Registration No. 560), of Orange, New Jersey, his attorney, with full
power of substitution and revocation, to prosecute this application, to make
alterations and amendments therein, to receive the patent, and to transact all
business in the Patent Office connected therewith.

Daniel Higham

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, DANIEL HUGHAM, a citizen of the United States and a resident of New York, in the County of New York and State of New York have made certain new and useful improvements in ~~METHODS OF SYN-~~
Condensed Visual and ^{7,234,523}
~~CHRONOUSLY RECORDING AND REPRODUCING OPTICAL IMPRESSIONS~~
^A
~~AND SOUNDS ASSOCIATED THEREWITH~~, of which the following is a description:

My invention relates to methods of synchronously recording and reproducing optical impressions and sounds associated therewith, and is particularly applicable to the so-called "talking pictures", in which a series of moving pictures are exhibited upon a screen or otherwise, this visual record being accompanied by the record of the sounds appropriate thereto, delivered in exact synchronism, each sound with the picture or pictures to which it belongs.

In making sound records for "talking pictures", the location of the source of sound close to the horn or receiver of the recording instrument, as is common in making ordinary sound records, is usually impracticable, partly because in most of the views to be depicted, the sounds emanate from various more or less separated points and also because it is ordinarily desirable to exclude the phonograph from the scene exhibited by the pictures. Furthermore, when the source of sound is located in close proximity to the horn of the recording instrument, there are certain disturbing influences which affect the recording operations, by reason of which influences the

quality of the recorded sounds is so affected as not to be truly representative of the original sounds. One of these influences is due to the fact that the amplitude of the recorded vibrations is so large that the resistance to the entrance of the cutting edge of the recording stylus into the material of the record blank increases very rapidly from the beginning to the end of the cut; or, in other words, the energy required to force the cutting edge into the material for the first quarter, for example, of the cut is very much less than that required to force the cutting edge into the material for the final quarter of the cut. Consequently, sounds which are relatively weak, are more perfectly recorded than very loud sounds, because with the former, the amplitude of vibration of the recording stylus will more nearly coincide with that of the sound waves. Another of these disturbing influences is due to the inertia and momentum of the diaphragm and recording devices carried by or connected with the same. As a result, when the diaphragm is subjected to vibration of considerable amplitude, the momentum of the parts causes the recording stylus to subsequently cut to a disproportionately great ^{amplitude} ~~depth~~.^{17/4/04} For these reasons, I find that the quality of the recorded sounds is in inverse ratio to the loudness thereof, so that when the attempt is made to make a ~~deep record~~ ^{17/4/04} ~~of a~~ record of great amplitude, the louder notes are generally of poor quality, and are out of proportion to the notes or sounds of less amplitude.

The principal object of my invention is to provide a method whereby the above named objections are eliminated. In accordance with this object, I place the phonograph or recording instrument at such a distance from the source of sound that the sound record obtained is

formed of vibrations of small amplitude, the phonograph or recording instrument being preferably without the range of the photographic camera employed for making a record of the optical impressions. The camera having been properly focused on the source of the optical impressions, I simultaneously photograph the latter and record the sounds associated with the same. The sound record obtained in this way, although of superior quality due to the small amplitude of the vibrations thereon, is too weak when reproduced directly ^{by means of a non-amplifying reproducing apparatus} to be useful for producing realistic effects in combination with the pictures associated therewith. ^{Sheet A 10/6/14} I accordingly obtain from the master record thus made, an amplified copy thereof, preferably by an apparatus by which the record is mechanically transferred and amplified. A positive having been made from the photographic film or other element affected by the light in taking the original photograph, the said positive and the amplified duplicate record when synchronously reproduced give a faithful, pleasing, and realistic reproduction of the original optical impressions and the sounds associated therewith.

In order that my invention may be better understood, attention is directed to the accompanying drawings forming a part of this specification and in which

Fig. 1 is a diagrammatic side view showing the preferred relative positions of a source of optical impressions and sounds, a photographic camera, and a recording instrument;

Fig. 2 is a view partly in cross section and partly in elevation illustrating my preferred embodiment of mechanical amplifying and duplicating apparatus;

Figs. 3 and 4 are diagrammatic views showing the relative positions of the recording stylus and the record for two different depths of cut of the stylus, one twice the other, these views serving to illustrate the rapid increase of the cross section of the material to be removed by the stylus during the latter part of the cutting operation; and

Fig. 5 is a diagram illustrating graphically the area of material removed by the stylus for each of the four quarters of two cuts, one twice as deep as the other.

Referring to Fig. 1, the numeral 1 designates a suitable source of sounds and optical impressions, such as a person dancing and singing, the numeral 2 a photographic camera, and the numeral 3 a suitable recording instrument, such as a phonograph of common construction having a rotatable support for a record 4 and a stylus movable transversely thereof, as is common in the phonographic art. The dotted lines in Fig. 1 define the limits of the range of the camera 2, the object 1 being located within the range and field of the camera and at the proper focal distance from the latter. The recording phonograph is located a considerable distance from the object 1 and without the range of the camera 2 so that it will be excluded from the picture taken by the camera. The performer, or source of the sounds and optical impressions, and the recording machines having been arranged in proper relative positions, the machines are started in operation at the proper time and the combined optical and sound records simultaneously made.

The optical record and the master sound record having been thus made, I now obtain an amplified copy of

the master sound record, preferably by apparatus by which the record is mechanically transferred and amplified. A suitable apparatus for the purpose is indicated in Fig. 2, in which master 4 is carried on the mandrel 5, and the blank 6 is carried on the mandrel 7. These mandrels are rotated simultaneously by any suitable gearing at a low speed, so that the surface speed of the master is sufficiently low to prevent any disturbing influence due to momentum or inertia of the moving parts. In this apparatus, the numeral 8 designates a support on which a member 9 is pivoted for movement substantially at right angles to the axes of the mandrels 5 and 7. This member 9 carries at its forward end two aligned pivots 10 and 11 supporting a weight 12 and permitting the latter to move in a direction substantially parallel to the axes of the mandrels 5 and 7. A lever 13 is pivoted to the weight 12 for movement towards and away from the record 4 and the blank 6. The numeral 14 indicates a manually movable lever by which the weight 12 may be lifted or by which it may be supported when there is no record on the mandrel 5, the downward movement of the said lever 14 being limited by a suitable stop 15. The lever 13 carries at its lower portion a stylus/preferably of sapphire adapted to track the record grooves formed in the master 4, and is formed with an elongated portion 17 carrying at its outer end a recording or cutting stylus 18 adapted to operate upon the blank 6. The styluses 16 and 18 are so arranged with respect to the pivot of the lever 13 as to give the desired amplification. In practice I find that with my preferred arrangement of recording apparatus, the maximum depth of cut obtained on my master record is about .0004"; so that by employing an amplification of two to one, I obtain on the duplicate record a maximum depth of cut of about .0008", a very satisfactory depth for sound reproduction.

A tension spring 12 connected to the lever 13 serves to withdraw the stylus 18 from the blank 6 when the weight 12 is lifted by the lever 14. By reason of the pivotal mounting of the weight 12 heretofore described, the styluses are permitted to remain in firm engagement with the master record and blank regardless of any eccentricities or other irregularities in the same and the stylus 16 is permitted to follow the lateral or other irregularities in the record groove in the master 4. It is obvious that the relative axial movement between the styluses and the record and blank may be obtained either by the axial movement of the mandrels 5 and 7, together with the record and blank supported thereby, or by mounting the parts 5 and 14 on a traveling carriage movable axially of the mandrels 5 and 7. I prefer, however, to have the part 5 stationary and to secure the necessary feeding movement by an axial movement of the mandrels and the record and blank supported thereby. Mechanisms suitable for producing the said feeding movement are well known in the phonographic art.

In operating the duplicating apparatus described above, the weight 12 is first lifted by means of the lever 14 to permit the record 4 to be placed on the mandrel 5. After the said record is in position, the weight 12 is lowered sufficiently to permit the blank 6 to be placed in position on the mandrel 7, after which the lever 14 is released to permit the weight 12 to move the styluses 16 and 18 into firm engagement with the record 4 and the blank 6 respectively. When now the motive means for the duplicating apparatus is set into operation to rotate the mandrels 5 and 7 and to produce the proper feeding movement between the styluses 16 and 18 and the master record and

blank, the blank will be provided with a record therein which will correspond with that on the master, except that it will be amplified. The photographic film or other light affected element containing a record of the scene photographed having been developed and a positive made therefrom, a faithful and realistic reproduction of the original optical impression and the sounds associated therewith may be made from the said positive and the amplified sound record by suitable synchronizing mechanism, such as that disclosed in my pending application S. N. 461,069, filed November 16, 1936.

Figures 3, 4 and 5 serve to explain the causes for the reduction of the amplitude of the sound waves with the recording apparatus arranged in accordance with my invention and also the causes for the improved quality of sound record resulting from said arrangement. Referring to Figures 3 and 4, the numeral 20 designates a circle representing the contour of the cutting edge of the recording stylus, and the numeral 21 designates in cross section the portion of the record or blank operated upon. The former of these figures shows a depth of cut one-half of that shown in the latter, this ratio of the depth of the cuts being the same as the preferred ratio between the depths of the cuts in my master and amplified duplicate records respectively. An inspection of the areas between the dotted lines and the lower portions of the circles 20 in these figures will show roughly that the amount of material to be removed by the recording stylus, and the resistance to the cutting of the said stylus increases rapidly with the depth of cut. This rapid increase is more clearly shown in Fig. 5. In this figure, I have plotted the cross sectional areas of the material removed by the recording stylus for each quarter of each of two

cuts, one twice as deep as the other. In making the computations for this figure, the maximum depths for the two cuts were taken as .0004" and .0008" respectively, these being approximately the maximum depths respectively for the master record and amplified duplicate record preferably obtained by me in practicing my invention. The diameter of the cutting edge of the recording stylus was taken as .050", a diameter which is common in practice. Referring to Figure 5, the line 23, 24, represents the cross sectional area of the material removed during the first quarter of the larger of the two cuts in question, or approximately the resistance of the stylus in making the said cut; to the same scale, the line 25, 26 represents the area removed or the resistance to the cutting during the second quarter of the said cut, the line 27, 28, the area and resistance during the third quarter, and the line 29, 30, the area and resistance during the fourth quarter. The rate of increase of resistance to the cutting effect of the stylus is graphically represented by the curved line 22, 23, 25, 27, 29. From this diagram, it will be evident that as the stylus cuts into the material, the resistance encountered thereby increases very rapidly and becomes very pronounced as the stylus reaches the maximum depth, the distortion of the sound waves therefore increasing rapidly with their increase in amplitude. It is also evident from this diagram that if the intensity of the sound waves be diminished, the amplitude of the record vibrations will likewise diminish; so that, if the recording instrument be located a considerable distance from the source of sound and optical impressions, as in my invention, the intensity of the sound waves will not be sufficient to record vibrations of the same amplitude as would be produced if the source of sound were located close to the recording instrument.

the location employed in ordinary sound recording. The curve 22, 31, 32, 33, 34, which is plotted to the same scale and in the same manner as the curve 22, 23, 25, 27, 29 represents a maximum cut of the lesser of the two depths referred to above. From a comparison of the two curves plotted in Figure 3, it will be again seen not only that the amount of material to be removed is much less for the shallower cut than for the deeper cut, but also that the resistance to the cutting of the stylus as the latter enters the record material is more nearly uniform for the former than for the latter cut. It is accordingly evident that although the sound record obtained when the sound recording instrument is located a considerable distance from the source of sounds, as is done in accordance with my invention, is weaker than that obtained when the recording instrument is in close proximity to the source of sound, the record obtained is of improved quality; so that, when the said record is amplified as described above, a sound record of desired intensity and exceeding purity and faithfulness is obtained. My invention, therefore, presents a practical method of excluding the phonograph or other recording instrument from the field of the camera and at the same time obtaining a faithful reproduction of excellent quality. *and of producing a better and more reliable record of the original.*

amplified record upon 16 mm
While the ~~duplicate~~ *duplicate* ~~formed from~~ the blank 6 might be used directly in the reproduction of the original sound record, I prefer to make duplicates thereof by any of the wellknown processes known in the phonographic art. It is obvious that many other changes may be made in the exact particulars of the method described without departing from the spirit of my invention.

What I claim as new and desire to protect by

Letters Patent of the United States is as follows:

1. The method of synchronously recording optical impressions and sounds associated therewith which consists in photographing the source of the optical impressions and in simultaneously recording the sounds associated with said impression ~~on a phonograph located~~ ^{7/23/13} at a relatively great distance from the source of said sounds, in obtaining ^{redundant sound 7/23/13} from the ~~phonograph~~ ^{"22/13"} record a ~~duplicate~~ sound record of increased amplitude, and in utilizing the light-affected photographic element for making a positive, whereby said positive and said ~~duplicate~~ ^{amplified 7/23/13} sound record are adapted when synchronously reproduced to accurately reproduce the original optical impressions and the sounds associated therewith, substantially as set forth.
2. The method of synchronously recording optical impressions and sounds associated therewith which consists in photographing the source of the optical impressions and in simultaneously recording the sounds associated with said impressions ~~on a phonograph located~~ ^{7/23/13} at a relatively great distance from the source of said sounds, in obtaining ^{redundant sound 7/23/13} from the ~~phonograph~~ record by amplifying mechanical transference a ~~duplicate~~ ^{7/23/13} sound record of increased amplitude, and in utilizing the light-affected photographic element for making a positive, whereby said positive and said ~~duplicate~~ ^{amplified 7/23/13} sound record are adapted when synchronously reproduced to faithfully reproduce the original optical impressions and the sounds associated therewith, substantially as set forth.
3. The method of synchronously recording optical impressions and sounds associated therewith which consists in photographing the source of the optical impressions and

in simultaneously recording the sounds associated with said impressions on a ^{7-2-3/8}phonograph located without the range of the photographic camera, in obtaining from the ^{Sound 7-2-3/8}phonograph record a ^{7-2-3/8}duplicate sound record of increased amplitude, and in utilizing the light-affected photographic element for making a positive, whereby said positive and said ^{amplified 7-2-3/8}duplicate sound record are adapted when synchronously reproduced to faithfully reproduce the original optical impressions and the sounds associated therewith, substantially as set forth.

4. The method of synchronously recording optical impressions and sounds associated therewith which consists in photographing the source of the optical impressions and in simultaneously recording the sounds associated with said impressions on a ^{7-2-3/8}phonograph located without the range and at a relatively great distance from the source of said sounds of the photographic camera, in obtaining from the ^{7-2-3/8}phonograph record by amplifying mechanical transference a ^{7-2-3/8}duplicate sound record of increased amplitude, and in utilizing the light-affected photographic element for making a positive, whereby said positive and said ^{amplified 7-2-3/8}duplicate sound record are adapted when synchronously reproduced to faithfully reproduce the original optical impressions and the sounds associated therewith, substantially as set forth.

5. The method of synchronously reproducing optical impressions and sounds associated therewith which consists in photographing the source of the optical impressions and in simultaneously recording the sounds associated with said impressions on a phonograph located at a relatively great distance from the source of said sounds, in obtaining from the ^{7-2-3/8}phonograph record a ^{7-2-3/8}duplicate record of increased amplitude, in utilizing the light-affected photo-

graphic element for making a positive, and finally in synchronously reproducing said positive and said ^{amplified} ~~duplicate~~ record, substantially as set forth. 1/4/78

6. The method of synchronously reproducing optical impressions and sounds associated therewith which consists in photographing the source of the optical impressions and in simultaneously recording the sounds associated with said impressions ^{7/2/73} ~~on a phonograph located~~ at a relatively great distance from the source of said sounds, in obtaining from the ^{recording sound 7/2/73} ~~phonograph record~~ by amplifying mechanical transference a ^{sound 7/2/73} ~~duplicate~~ record of increased amplitude, in utilising the light-affected photographic element for making a positive, and finally in synchronously reproducing said positive and said ^{amp. 7/2/73} ~~duplicate~~ record, substantially as set forth.

7. The method of synchronously reproducing optical impressions and sounds associated therewith which consists in photographing the source of the optical impressions and in simultaneously recording the sounds associated with said impressions ^{7/2/73} ~~on a phonograph located~~ without the range of the photographic camera, in obtaining from the ^{sound 7/2/73} ~~phonograph~~ record a ^{recording sound 7/2/73} ~~duplicate~~ record of increased amplitude, in utilizing the light-affected photographic element for making a positive, and finally in synchronously reproducing said positive and said ^{amplified 7/2/73} ~~duplicate~~ record, substantially as set forth.

8. The method of synchronously reproducing optical impressions and sounds associated therewith which consists in photographing the source of the optical impressions and in simultaneously recording the sounds associated with said impressions ^{7/2/73} ~~(on a phonograph located~~ without the range

and at a relatively great distance from the source of said sounds
of the photographic camera, in obtaining from the phono-
graph record by amplifying mechanical transference a
duplicate record of increased amplitude, in utilizing the
light-affected photographic element for making a positive,
and finally in synchronously reproducing said positive and
said duplicate record, substantially as set forth.

This specification signed and witnessed this 1st day of April 1912

Witnesseth:

Daniel Higham

1. Frederick Bachmann

2. Anna P. Klehm

Oath.

State of New Jersey } ss.,
County of Essex }

DANIEL HIGHAM, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of New York, County of New York and State of New York,

that he verily believes himself to be the original, first and sole inventor of the improvements in METHODS OF SYNCHRONOUSLY RECORDING AND REPRODUCING OPTICAL EXPRESSIONS AND SOUNDS ASSOCIATED THEREWITH,

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

Sworn to and subscribed before me this 1st day of April 1912

Daniel Higham
Anna P. Klehm
Notary Public.

[Seal]

Address only
"The Commissioner of Patents,
Washington, D. C."

M. Paper No. 2

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON October 8, 1912.

Daniel Higham,
c/o Frank L. Dyer,
Orange,
New Jersey.



Please find below a communication from the EXAMINER in charge of your application.

Methods of Synchronously Recording and Reproducing Optical Impressions etc., filed April 2, 1912

Serial #687,987.

E. B. Moore

Commissioner of Patents.

The title in this case is unduly long and should be abbreviated.

Page 6, lines 13 - 15, the reference to a modified form, in which the parts 8 and 14 are mounted on a carriage, should be illustrated on the drawing or erased. Applicant will be allowed only to show this carriage in a conventional way, if he can point out such an old structure: and if he cannot do this, he will not be allowed to retain this modification in the present case, as the present description is not specific enough to support a specific structure of traveling carriage.

The claims are rejected on either of the patents to

Greenbaum, (British), #7,426, of 1909;

(88-16, Syn.);

Barker, (British), #8,656, of 1909;

(88-16 Syn.);

in view of

Mason, #970,615, Sep. 20, 1910;

Walcutt, #733,921, July 14, 1903;

(181-16).

Greenbaum and Barker each show a combination of machines for simultaneously recording pictures and sounds, and this same combination is adapted to be used to reproduce these pictures and sounds. It is observed that the machines in these patents are located in close proximity to each other, and consequently the sound

records are more or less feeble, the same as in applicant's device. Then all that applicant does in his method of procedure that is not followed out in the patented devices, is to amplify the more or less weak sound record before reproducing the same. This is not thought to involve any degree of inventive skill in view of the expedient shown by Edison and Walcott, cited. Thus the "method" claims treated as such are seen to present nothing patentable over the above art.

The claims are also rejected as being drawn to an improper method, since they merely recite the obvious steps in the operation of the devices above cited, as pointed out in the preceding paragraph.

Then considering the substance of the claims, and disregarding the "method" form in which they are now drawn, they are thought to cover an aggregation, and are accordingly rejected. That is to say, whatever invention there is in the present case is seen to reside in the specific amplifying means per se, and not in its inclusion in the old combination of picture and sound machines. In fact, no co-action whatever is seen to exist between the amplifying means and the combination above referred to. Whatever improvement is to be derived from the amplifying of the sound record is held to relate to the sound machine alone, and should therefore be claimed in such manner.

The combination of picture and sound machines is shown to be old by the above patents; and since applicant obtains no new result by using an amplified record instead of the more or less feeble one, his invention does not lie in the substitution of the amplified record in this old combination but in this record element alone or the device for producing the same. See In Re

IN THE UNITED STATES PATENT OFFICE.

DANIEL HICHAM,)

METHODS OF SYNCHRONOUSLY
RECORDING AND REPRODUCING
OPTICAL IMPRESSIONS AND
SOUNDS ASSOCIATED THEREWITH.)

Room No. 312.

Filed April 2, 1912,)

Serial No. 687,967.)

HONORABLE COMMISSIONER OF PATENTS.

S I R:

In response to the Office action of
October 8, 1912, please amend the above entitled case as
follows:

In the preamble of the specification,
change the title of the invention to read as follows:
- RECORDING AND REPRODUCING COMBINED AURAL AND OPTICAL
IMPRESSIONS - .

In line 13, page 6, change "mounting" to
- moving - ; and in line 14, same page, cancel "on a
traveling carriage movable".

In line 5, claim 1, cancel "on a phonograph
located"; in line 7, same claim, change "phonograph" to
- resulting sound - , and cancel "duplicate"; and in line
10, same claim, change "duplicate" to - amplified - .

In line 5, claim 2, cancel "on a phonograph
located"; in line 7, same claim, change "phonograph" to
- resulting sound - ; in line 8, same claim, cancel
"duplicate"; and in line 11, same claim, change "duplicate"
to - amplified - .

In line 5, claim 3, cancel "on a phonograph
located"; in line 6, same claim, change "phonograph"
to - resulting sound - ; in line 7, same claim, cancel

"duplicate"; and in line 10, same claim, change "duplicate" to - amplified -.

In line 5, claim 4, cancel "on a phonograph located"; in lines 6 and 7, same claim, change "phonograph" to - resulting sound - ; in line 8, same claim, cancel "duplicate"; and in lines 10 and 11, same claim, change "duplicate" to - amplified - .

In line 5, claim 5, cancel "on a phonograph located"; in line 7, same claim, change "phonograph" to - resulting sound -, and "duplicate" to - sound - ; and in line 10, same claim, change "duplicate" to - amplified -.

In line 5, claim 6, cancel "on a phonograph located"; in line 7, same claim, change "phonograph" to - resulting sound - ; in line 8, same claim, change "duplicate" to - sound - ; and in line 11, same claim, change "duplicate" to - amplified - .

In line 5, claim 7, cancel "on a phonograph located"; in line 6, same claim, change "phonograph" to - resulting sound - ; in line 7, same claim, change "duplicate" to - sound - ; and in line 10, same claim, change "duplicate" to - amplified -.

In line 5, claim 8, cancel "on a phonograph located"; in lines 6 and 7, same claims, change "phonograph" to - resulting sound - ; in line 8, same claim, change "duplicate" to - sound - ; and in line 11, same claim, change "duplicate" to - amplified - .

R E M A R K S

The specification as now presented is thought to be free from the objections raised by the Examiner in the first and second paragraphs of the last Office action.

The claims in this case are thought to be drawn to a proper method, the mere fact that the method is best carried on by means of apparatus such as that disclosed being immaterial. It is well settled that a process or method though of a mechanical nature and best illustrated by mechanism may, if new and useful, be the proper subject of a patent. *Weston*, 94 O.G. 1785; 1901 C.D. 290. *John R. Williams Co. et al. v. Miller, et al Mfg. Co.* 107 F. 290 (N.Y.); 97 O.G. 2308; 1901 C.D. 517.

In *Lawthor vs. Hamilton*, 124 U.S., 1, 6, the patent related to the extraction of oil from oleaginous seeds. Notwithstanding the fact that the invention claimed was performed by the aid of machinery, the Supreme Court held that the same constituted a patentable process.

In view of the foregoing, it is thought that applicant's claims are properly drawn to cover a method. This being the case, the last two paragraphs of the last Office action have no bearing on the invention as claimed.

In regard to the rejection of the claims, one of the steps of applicant's method to-wit: obtaining a sound record of increased amplitude, is not disclosed in the patents to Greenbaum and Barker. Citing other patents which may employ the omitted step, does not cure the defect, for the simple reason that the absence of one step essential to applicant's process or method cannot exist and the method remain. Any process or method which does not include each step, and each step in its essential order, is a different process. In vol. 1, page 253 of Robinson on Patents, Mr. Robinson says:

"An art, like every other invention, is a unit. Whatever number of acts it may employ, it is still one; and any variation in the number or character of its elements which introduces a different idea or means constitutes a different art, and, if hitherto unknown, a new invention. Thus, the addition to an existing art of a single step by which its essential character is changed, or the omission of one act which was a necessary element

in the art as previously practiced, or even a material alteration in the order of the acts performed, is sufficient to destroy its unity, and produce another art which is entitled to the same protection as the old."

The patents to Greenbaum and Barker relate principally to apparatus, and it is well established that to anticipate method or process claims, it is necessary to show not only that the prior apparatus might have been used in carrying out the method or process claimed, but that such use was contemplated or that it would have occurred to an ordinary mechanic. (See Carnegie Steel Company Ltd. vs. Cambria Iron Co. 22 Supreme Court 698; 185 U.S. 408; 46 L. Ed. 968; 99 O.G. 1866; 1902 C.D. 592, and Burdon Wire & Supply Co. vs. Williams. United Wire & Supply Company vs. Same, 128 F. 927.) Certainly these patents do not describe a use of the apparatus to perform the method herein claimed, and it is submitted that the said method would not occur to an ordinary mechanic, even though skilled in the art, merely upon the inspection of the said patents. The patents to Edison and Walcott are apparently cited merely for the purpose of disclosing the amplification of a sound record.

An improved result is obtained by applicant's process; and as the art cited does not disclose the said process, reconsideration and allowance are respectfully requested.

Respectfully submitted,

DANIEL NICHAM,

By Frank L. Dyers
his attorney.

Orange, New Jersey,

September 23, 1913.

FB-XGK

Div. 7, Room 312

Address only
The Commissioner of Patents,
Washington, D. C.

2-220

M. Paper No. 4

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON

Oct. 24, 1913.

Frank L. Dyar,

Orange,

New Jersey.

Please find below a communication from the EXAMINER in charge of the application of

Daniel Higham, Filed April 2, 1912, Methods of Synchronously

Recording etc., Serial #667,967.



c 6-3021

Commissioner of Patents.

Case reconsidered as amended Sep. 24, 1913.

The claims are rejected on the references and for the
reasons of record.

It is pointed out that in Greenbaum and Barker, of record,
the recording phonograph is shown as being located without the
range of the camera, as called for in claims 4, 7, and 8. This
is moreover, held to be a very obvious arrangement of the two
apparatus.

The point is again emphasized that the novelty in this case,
if any, must reside in the sound record amplifying feature
per se, which is properly examinable in the class of Acoustics
in Division 23.

J. R. M.

Examiner.

IN THE UNITED STATES PATENT OFFICE.

DANIEL HIGHAM,)
RECORDING AND REPRODUCING)
COMBINED AURAL AND OPTICAL)
IMPRESSIONS,) Room No. 312
Filed April 2, 1912,)
Serial No. 687,967.)

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to the Office action of
October 24, 1913, please amend the above entitled case as
follows:

In line 22, page 2, change "depth" to
"amplitude", and in line 25, same page, cancel "deep
record, or a".

In line 13, page 3, after "directly" insert
"by ordinary or non-amplifying reproducing apparatus",
and in line 12, same page, after the period (.) insert the
following: - "By the use of amplifying reproducing apparatus,
such for instance as shown in my United States patent
No. 1,036,255, the sound record thus made may be reproduced
with sufficient loudness, but I have found that amplifica-
tion of sound is not all that is required for realistic
effects in talking pictures. By using the sound record
made as described above as a master record and making
therefrom an amplified sound record, as by mechanical trans-
ferring means, I have discovered that the amplified record
thus obtained gives a decided improvement in realistic
effects by reason of the naturalness and trueness of the
sound reproduction. This effect is not obtained by mere
amplification by amplifying reproducing apparatus such as
shown, for example, in my patent referred to above - .

In the 8th line from the bottom of page 9

change "duplicate formed from" to - amplified record upon -

In line 6, claim 3, after "camera" insert - and

at a relatively great distance from the source of said sounds - .

✓ In line 6, claim 4, after "camera" insert

- and at a relatively great distance from the source of said sounds - .

In line 6, claim 7, after "camera" insert

- and at a relatively great distance from the source of said sounds - .

✓ In line 6, claim 8, after "camera" insert

- and at a relatively great distance from the source of said sounds - .

REMARKS

It is thought that the claims as now drawn cover a patentable method. That the claims are properly drawn to a method will, it is thought, be obvious by consideration of the following quotation from Walker on Patents, 4th Ed. page 3:

"The generic definition of process is 'an operation performed by rule to produce a result'. Operations performed by rule may be classified as:
1, operations which consist partly or wholly in the employment of heat, light, electricity, magnetism, chemistry, pneumatics, hydraulics, or some other non-mechanical sciences;
2, operations which consist entirely of mechanical transactions, but which may be performed by hand or by any of several different mechanisms or machines.
It is settled that all processes which belong to the first class are subjects of patents;
It was formerly debatable whether processes which belong to the third class are subjects of patents or not; but reason is now known to answer that question in the affirmative. A negative answer would deny patentability to the art of weaving, if the art of weaving were new; and any such denial would undeniably contravene both the letter and the spirit of the patent law."

In view of the above, applicant cannot possibly understand why the invention disclosed is not a patentable method. The transactions set forth in the claims are performed by rule to produce a single new result, to-wit - the faithful and realistic recording and reproducing of combined aural and optical impressions. These transactions are not limited to the peculiar functions of any particular machines, but may be performed by different means and in different ways. The step, for example, which consists in obtaining a sound record of increased amplitude may be performed by the mechanical transferring apparatus disclosed, or it may be performed in other ways, though the mechanical transferring means disclosed are preferable. If the Examiner desires to adhere to his position originally taken that the claims are drawn to an improper method, he is respectfully requested to explain his position more fully in view of the above remarks.

Considering the references cited by the Examiner, none of these references disclose applicant's improved process. The patents to Greenbaum and Barker do not disclose the step of obtaining a sound record of increased amplitude by amplifying mechanical transference or in any other way. The patents to Edison and Walcott do not relate to talking pictures and offer no suggestion of applicant's process. As to the patents to Greenbaum and Barker, the Examiner is, of course, aware of the fact that a method or process is like a combination in apparatus claims in that it is a unit and that any material variation in the number or character of its elements destroys or changes the process. The employment of the step of obtaining an amplified sound record for reproduction, which is not disclosed by Greenbaum and Barker produces an entirely different process from that disclosed by the said patentees, the process thus obtained being of a very improved character in the giving of realistic

effects in reproduction. It is thought that the Examiner does not fully appreciate the improved results obtained by the applicant. Applicant's object was not merely to obtain loudness of reproduction. The object was primarily to produce realistic effects in talking pictures, and this effect may be spoiled by excessive loudness. It is faithfulness of reproduction and the proper differences in character or tone by which our ears judge of the distance of sound and partly also of the movements of the performers in the pictures that applicant desired to obtain and has obtained by this invention. It was not obvious to the applicant prior to this invention, how the desired improved results tending towards realism in the talking pictures could be obtained. Applicant, who has been working almost exclusively on talking pictures for a considerable number of years, conducted numerous experiments running over a long period before he discovered the method claimed and advantages obtained thereby. He then found, amongst other things, that very improved results in realistic effects, which could not be obtained by the amplifying reproducing apparatus shown in his patent referred to above, were obtained by the amplification of the record, as by amplifying mechanical transference. Applicant's method is thought to be the first by which practical realistic talking pictures have been obtained, and as this method is not disclosed nor suggested by the prior art, it is thought that the claims should be allowed.

Reconsideration and allowance are accordingly respectfully requested.

Respectfully submitted,

DANIEL HIGHAM,

By Grant L. Rogers

his Attorney.

Orange, New Jersey,

October 6, 1914.

Div. 7 Room 312

2-260

M. Paper No. 6
 All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

"The Commissioner of Patents,
 Washington, D. C."
 and not any official by name.

DEPARTMENT OF THE INTERIOR
 UNITED STATES PATENT OFFICE
 WASHINGTON

Oct. 29, 1914



Frank L. Dyer,

Orange,

N. J.

Please find below a communication from the EXAMINER in charge of the application of

Daniel Higham, filed April 2, 1912, Methods of Synchronously

Recording and Reproducing Optical Impressions etc., Serial

#687,967.

Thomas Ewing
 Commissioner of Patents.

45-2031

Case reconsidered as amended Oct. 7, 1914.

The ground taken by the examiner that the claims do not state a proper method is receded from; but the other grounds of rejection are believed to be sound and are adhered to. The claims are again rejected.

The following publication will show that the desirability of amplifying the sound upon being reproduced has been felt, and that an endeavor has been made to accomplish this end:

"The Nickelodeon", Feb. 18, 1911, Vol. V. No. 7 pages 189-190. (A copy of which is to be found in this office). The microphone and horn that are generally used amplify the sounds to a certain degree; and thus it is held that applicant's invention does not consist in the synchronizing combination but in the amplification of sound records per se, which feature belongs to the class of "Acoustics" examinable in another division of this

Office.

JRM.

Examiner.

IN THE UNITED STATES PATENT OFFICE

Daniel Higham

RECORDING AND REPRODUCING COMBINED
AURAL AND OPTICAL IMPRESSIONS

Filed April 2, 1912

Room No. 312.

Serial No. 687,967

HONORABLE COMMISSIONER OF PATENTS,

S I R :

The Office action of October 29, 1914
has been carefully considered.

Referring to the contention of the Examiner that
"The microphone and horn that are generally used amplify
the sounds to a certain degree; and thus it is held that
applicant's invention does not consist in the synchronizing
combination but in the amplification of sound records per
se", the ordinary use of microphones and horns to amplify
sound does not correspond in any way with the step in ap-
plicant's process of obtaining a sound record of increased
amplitude as by the use of amplifying mechanical transfer-
ence. In talking pictures the microphone or horn has ap-
parently been used only as a part of the final step of syn-
chronously reproducing the positive and the amplified record.
In applicant's process this is a step entirely distinct from
the step of obtaining an amplified sound record. What
applicant has really done is to introduce a new step in
the process of producing talking pictures, this new step
producing essentially a new result.

Furthermore, applicant has tried many forms of microphones under various conditions in connection with the production of talking pictures, and he has seen many experiments conducted by Mr. Edison for the same purpose; yet in not one of these cases did the sound have a suitable quality of tone to produce the necessary illusion that the sound emanated from the objects in motion. In other words, the sound produced was not of such quality as one would expect to come from the images seen. Applicant has discovered that by the production of an amplified record in the manner described and claimed, the proper quality ~~of sound~~ can be given to the aural portion of the talking picture production. In this connection, the Examiner's attention is again directed to Figures 3, 4 and 5 of the drawings and pages 7, 8 and 9 of the specification.

The mere fact that there may have been an improvement in a particular part of the process or the addition of a single new step does not negative patentability in a new and complete process containing this step as one of its elements. There is no reference of record showing anything which is the substantial equivalent of the process set forth in the claims, and the Examiner is no doubt well aware of the numerous decisions holding that a process, like a combination, is a unit, and the addition to an existing art of a single step by which its essential character is changed or any other material alteration in the existing art produces a new art which is entitled to the same protection as the old. See Robinson on Patents, Vol. 1, page 253; Victor Talking Machine Co. vs. American Graphophone Co., 169 F. 359-372.

The new reference cited by the Examiner, to-wit, the publication in "The Nickelodeon", does not disclose an anticipation of applicant's invention. In fact, the whole article clearly points out difficulties in the solution of the problem undertaken and solved by applicant, but gives no idea as to how these difficulties can be overcome. On page 190 of the said publication, for example, it is stated as follows:-

"The registering of sounds at a distance was harder to accomplish than synchronism. Hitherto the membranes that formed an essential part of the graphophone had given very unsatisfactory results. The sound of an orchestra could be recorded at a distance of several yards, but a voice could not be recorded unless it came within a foot and a half of the instrument. And the apparatus gave forth only fifty percent of the sound it received."

In another place the said publication states:

"Owing to the impossibility of registering sounds at a distance, the graphophone had to be placed between the biograph camera and the subject, and so it was impossible to obtain the desired result."

This difficulty which the publication states made it impossible to obtain the desired result was entirely overcome by applicant and in a way that produced such superior results that by means of applicant's invention it was possible for the first time to produce commercial talking pictures on a large scale. In spite of the fact that the use of the amplifying horn and microphone were well known at the date of the publication in question, a desirable reproduction of the sound is referred to as a real difficulty in the production of commercial talking pictures. It is thought that the Examiner will agree that the mere statement in the publication referred to that Mr. Gaumont has

some secret means of overcoming the difficulties referred to, is not an anticipation of applicant's claims.

It is thought that applicant's claims are patentable, and reconsideration and allowance are accordingly requested.

Respectfully submitted,

DANIEL HIGHAM

By Frank L. Dyce

His Attorney

Orange, N. J.

September // , 1915

FB-JS

Div. 7 Room 312

2-200

M. Paper No. 4

Address
"The Commissioner of Patents,
Washington, D. C.,"
and set any official by name.

All communications respecting this
application should give the serial number,
date of filing, title of invention, and
name of the applicant.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON

Oct. 21, 1915

Frank L. Dyer,

Orange,

New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

D. Higham, filed April 2, 1912, Methods of Synchronously Record-

ing and Reproducing Optical Impressions and Sounds Associated

Therewith, Serial No. 667,967.

Thomas Ewing
Commissioner of Patents.

6-5911

Case reconsidered in connection with communication of

Sep. 13, 1915.

It is reported that the "Nickelodeon" publication was cited simply to show that the necessity of amplifying the sound record had been felt and an effort made to meet this necessity. Instead of emphasizing only the paragraph quoted by applicant, attention should also be given to the paragraph beginning near the foot of column 1 on page 190 of this article, in which mention is made of several means by which the amplification of sounds was obtained and improved. Then in view of this disclosure and the well known means of amplifying the sound record as shown by the art cited, the adoption of the last named means to meet the well known demand is held to be very obvious. The expediency of amplifying sound records is recognized as being the same, whether used alone with moving pictures. The rejection of the claims is therefore repeated.

The rejection on the ground that the invention resides in the amplifying means per se is also repeated, special attention being called to the first office letter, last two paragraphs.

JRW.

Examiner.

IN THE UNITED STATES PATENT OFFICE

Daniel Higham

RECORDING AND REPRODUCING COMBINED
AURAL AND OPTICAL IMPRESSIONS

Room No. 312

Filed April 2, 1912

Serial No; 687,967

HONORABLE COMMISSIONER OF PATENTS,

S I R : -

In response to the Office action of
October 21, 1915, please amend the above entitled case as
follows:-

Page 7, lines 10 and 11, change "pending applica-
tion S.H. 461,869, filed November 10, 1906" to - United
States Patent No. 1,054,203, dated February 25, 1913 - .

Page 9, line 24, after "quality" insert - and of
producing faithful and realistic talking picture effects - .

Cancel claims 1, 2, 5 and 6 and renumber claims
3, 4, 7 and 8 as 1, 2, 3 and 4 respectively.

R E M A R K S

In view of the last Office action, this case has
again been carefully considered. Applicant's invention
does not consist merely in the amplification of sound, but
it consists in a method whereby the production of realistic
effects in talking pictures is accomplished. By appli-
cant's invention, not only was it possible to exclude the
sound recording apparatus from the field of the camera, but

it was possible to obtain sufficiently true reproduced sounds to give a good illusion that the reproduced sounds emanate from the objects in motion.

Furthermore, the amplification of sound referred to in the last paragraph, column 1, page 190 of the Michelodeon is not the equivalent of the step in applicant's method of producing an amplified sound record. It relates more nearly to the final step in applicant's process of finally reproducing the positive and record in synchronism, in that in the latter step use would probably, though not necessarily, be made of a trumpet, and use might be made of the other apparatus described in the said paragraph. Applicant's step of amplifying the sound record is entirely distinct from anything disclosed in the said article. Referring to Robinson on Patents, Vol. 1, page 253, Mr. Robinson points out that an art or a method is a unit and that the "addition to an existing art of a single step by which its essential character is changed * * * * * or even a material alteration in the order of the acts performed, is sufficient to destroy its unity and to produce another art which is entitled to the same protection as the old". The step of amplifying the sound record is an addition to the prior methods and it produces in talking pictures a result which is superior to any obtained before applicant's invention. Again, admitting that it was old prior to applicant's invention to amplify sounds in connection with talking pictures, no one prior to applicant employed this step in the same order as applicant in a method

of producing talking pictures. No one made an amplified sound record in talking pictures prior to the reproduction of the record in synchronism with the exhibition of the picture. Applicant has, by the improved method herein described, made a clear advance in the production of realistic talking picture effects; and the invention is not disclosed nor, it is submitted, is it suggested by the prior art. Nor does the fact that there may be invention in the apparatus used negative patentability in the method.

Although it is thought that the publication in the Nickelodeon is not in any way an anticipation of applicant's claims, the invention herein claimed was completed before the date of said publication, and an affidavit to this effect is presented herewith.

The canceled claims are thought to be patentable, but they have been canceled with a view to expediting the allowance of the case inasmuch as the remaining claims adequately protect the invention.

Reconsideration and allowance are respectfully requested.

Respectfully submitted,

DANIEL HIGHAM

By *Samuel C. Rogers*

His Attorney

Orange, N. J.

October /^o , 1916

EB-JS

IN THE UNITED STATES PATENT OFFICE

Daniel Higham

RECORDING AND REPRODUCING COMBINED
AURAL AND OPTICAL IMPRESSIONS

Filed April 2, 1912

Room No. 312.

Serial No. 687,967

AFFIDAVIT OF DANIEL HIGHAM

State of New Jersey)
County of Essex) ss.:

DANIEL HIGHAM, being first duly sworn, deposes and says that he is the same Daniel Higham whose application for Letters Patent for Recording and Reproducing Combined Aural and Optical Impressions, Serial No. 687,967, was filed in the United States Patent Office on or about the 2nd day of April, 1912; that prior to February 18, 1911 he successfully carried out a method of recording and reproducing combined aural and optical impressions embodying the invention set forth in the claims of said application; that the following is an accurate description of said method:-

A recording phonograph for recording sounds associated with objects in motion was placed without the range of a photographic camera employed for making a motion picture of the objects in motion, the phonograph being then at such a distance from the objects in motion that the sound record obtained was formed with undulations of small amplitude. Thereupon the moving objects were photographed by the said

camera and a record of the sounds associated with said objects was made by the recording phonograph. From the phonograph record thus obtained, a copy was made in which the vibrations were of increased amplitude, this copy being made from the original record by mechanical transference, apparatus such as that shown in Fig. 2 of the drawings of said application being employed for this purpose. This apparatus comprised a lever having a tracing stylus arranged to follow the grooves in the original record and a recording stylus arranged to cut the amplified vibrations into the amplified copy of the said record, the tracing stylus being nearer the fulcrum of the lever than the cutting stylus. A positive was then made from the photographic film affected by the light in taking the original photograph; and the said positive and the amplified record were reproduced in synchronism, a faithful and realistic reproduction of the original optical impression and the sounds associated therewith being thus obtained.

That prior to February 18, 1911, the complete process described above was successfully performed many times in New York City, N. Y.; that deponent does not know and does not believe that the above described invention has been in public use or on sale in this country, or patented or described in any printed publication in this or any foreign country for more than two years prior to his above named application; and that he has never abandoned the said invention.

(Signed) Daniel K. Ryan.

Sworn to and subscribed before me

this 10 day of October, 1916

(Signed) Greiner

NOTARY PUBLIC, STATE OF NEW JERSEY
COMMISSION EXPIRES JULY 2, 1917

Div. 7 Room 512

2-260

W Paper No. 70

known as
"The Commissioner of Patents,
Washington, D. C."
and not any official by name.

All communications respecting this
application should give the serial number,
date of filing, title of invention, and
name of the applicant.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

Oct. 21, 1916.

Frank L. Dyer,

Orange,

New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

Daniel Higham, filed April 2, 1912, Methods of Synchronously
Recording and Producing Optical Impressions and Sounds Asso-
ciated Therewith, Serial No. 687,967. *Thomas Ewing*

Commissioner of Patents.

6-5431

Case reconsidered as amended Oct. 11, 1916.

The "Hickelodion" publication is withdrawn as a reference
in this case; but the other grounds of rejection are adhered
to and are hereby made final.

JRM.

Examiner.

Dec 4 1911

Legal Dept =

Have you patented in connection
with Speaking Picture, The process

of photographing + simultaneously
Recording on the phonograph
by a sensitive recorder the
sounds, which of themselves
are inadequate in volume to
be useful + then amplifying
such weak record by mechanical
means - to record a sufficient
volume of sound to closely
imitate the volume of the
original sound -

~~Edison~~

Edison

Rec'd Dec 4, 1911. B.B.

211 Polk
Sylva-dia
Thigham?

Heard you there with some
notes and sketches & made of ~~the~~
method of making loud records
from a meeker we also a
copy of your ~~soothers~~ record
patterns -

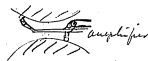
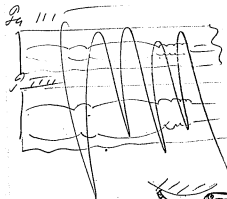
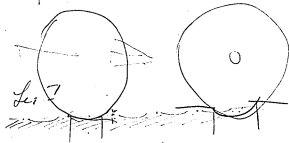
The suggestion I make of
conceal is only one way and in
fact only an idea you can
improve on it or you may
find it will have to be done
some other way. Lewins

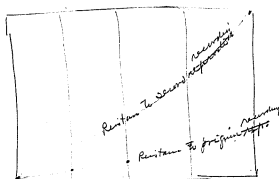
Thigham -
Thigham is has been found
very difficult in fact impossible to
make loud records unless the sound
that is being recorded is very close
to the mouth of the horn as the volume
of air against the diaphragm in ~~less~~
~~too~~ confined in a compact space and
gives considerable pressure against the
diaphragm same -
with my method ^{as is necessary in making it} I make a record
of an any sound that is to be recorded
at considerable distance from the horn
and records will have a very shallow
groove say approximately $\frac{1}{8}$ the depth
of the final record ^{that} will use in common
reproduction said sound

By means a very sensitive diaphragm
all sounds within certain limits reproduce
the same and to record such vibrations some
limits as to the depth of the groove I am
able to make in record blank groove
is very shallow and if I were to reproduce
with another direct from said record
with as a reproducer the sound would
be very weak and and after a short
time the groove would be worn out
and the reproduction would be very
poor -

To overcome this I provide a multiplying
device consisting of levers and I reproduce
the shallow groove in another blank to
considerable depth which gives me a
greatly amplified reproduction. This
amplified record is now my master
from which I make mold in the usual
way generally by applying a coating of

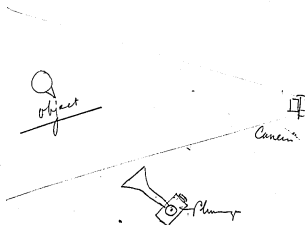
graphite and electro plating or by
any other well known means -





Methods of making sound records consisting
in first making record of the substance,
a shallow groove that will ^{but little} resist
to the vibrating of the diaphragm and in
duplicating said record by mechanical means.
(Lipson & Johnson's shallow groove being adapted
to vibrate less than the cutting stylus
making the duplicate record.)

Claim - etc -



Wigham does not use
the sensitive recorder.

~~Wigham~~
Distortion of some
sounds with sensitive
recorder.

September 22, 1917

Mr. Edison:-

FOLIO 833

I hand you herewith our copy of the application papers of Daniel Higham, Serial No. 687,967, filed April 2, 1912 and entitled Recording and Reproducing Combined Aural and Optical Impressions. This case has been finally rejected in the Office action of October 21, 1916, and the question arises whether we shall take an appeal or abandon the application.

The invention relates to the method employed in producing talking pictures by the Kinetophone and all the claims are drawn to the method. Each of the claims includes the step of obtaining an amplified record of the original sound record which is to be used in conjunction with the positive film in synchronously reproducing the pictures and sounds associated therewith. We have contended that this step is novel, but the Examiner has finally rejected all the claims on the ground that there is no novelty in the method, claiming that whatever invention there is in the amplification resides in the specific sound amplifying means.

There seems to be but little, if any, novelty in this case, and in view of the status of the Kinetophone business, you will probably wish this case abandoned. Under the arrangement made with Mr. Higham we are entitled only to a license under this invention. Mr. Higham has stated that he does not care to take an appeal in this case.

Kindly advise whether or not you wish an appeal taken.

William A. Hardy

Patent Series
Patent Application Files

Folio # 845 Storage Battery

U.S. Patent #: 1167485

Primary Applicant: Edison, Thomas A

Date Executed: 4/23/1912

Rec'd
Apr. 18, 1912 H. B. Bissman
C. J. Plin
4/18/12
Harry Bissman

April 17 Legal Dept.
1912

The invention consists in the use Cerium oxide
in the positive tube of an alkaline storage battery
as described in part —

The oxide is prepared by precipitating a cerium
salt by an alkali ~~precipitate~~ such
as caustic soda washing the precipitate
free of the resultant salts, drying the
precipitate, and then igniting the precipitate
in hydrogen gas at a white heat, cooling
down in hydrogen, and loading the
same in tubes in precisely the same
manner as when nickel hydroxide
+ metallic nickel flake is used —

E. Bissman

Patent Series
Patent Application Files

Folio # 846 Record Tablet Molds

Serial #: 694658

Primary Applicant: Edison, Thomas A

Date Executed: 4/30/1912

[PHOTOCOPY]

Pat. No. *144*

Serial No. *694658*

Applicant.

Address.

Thomas A. Edison

Title: *Round Tablet Molds*

Filed *May 2, 1912.*

Examiner's Room No.

Assignee

Ass't Excc.

Recorded

Liber

Page

Patent No.

Issued

ACTIONS.

1. *Rejected July 15, 1912* 16 *Withdrawn*
2. *Amended June 14, 1913* 17
3. *Rejected August 11, 1913* 18
4. *Amended July 15, 1914* 19
5. *Rejected Sept. 3, 1914* 20
6. *Amended July 14, 1915* 21
7. *Rejected Aug. 10, 1915* 22
8. *Amended July 21, 1916* 23
9. *Finally Rejected July 24, 1916* 24
10. *Associated Town of N.Y. Co* 25
11. *Dyer & Holden Aug 19, 1917* 26
12. 27
13. 28
14. 29
15. 30

Dyer & Holden Associated
FRANK E. DYER,
Counsel,
Orange, New Jersey.

VAULT

Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON,
a citizen of the United States, residing and having a Post Office address at
Llewellyn Park, West Orange, Essex County, New Jersey,

prays that letters patent may be granted to him for the improvements in

- RECORD TABLE HOLDS -

set forth in the annexed specification; and he hereby appoints Frank L. Dyer
(Registration No. 560), of Orange, New Jersey, his attorney, with full
power of substitution and revocation, to prosecute this application, to make
alterations and amendments therein, to receive the patent, and to transact all
business in the Patent Office connected therewith.

Thomas A. Edison

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, in the County of Essex and State of New Jersey, have invented certain new and useful improvements in RECORD TABLET MOLDING, of which the following is a description:

My invention relates to sound record and other tablets, and more particularly to apparatus for use in molding the same. In its preferred form, my invention is particularly designed for use in connection with the molding process set forth and claimed in an application of Jonas W. Aylsworth, Serial No. 674,289, filed January 30, 1912. According to this process, a base or backing is provided with a surface covering or veneer of suitable moldable material, usually a high grade homogeneous material, the process involving the formation of the surface veneer upon the smooth polished surface of a metallic plate or other blank mold and the ^{subsequent} transfer of the same to the surface of the object to be coated under heat and pressure with the firm adhesion or welding of the surface veneer to the object. When the coated article is to be provided with a delicate impression, such as a sound record impression, the surface veneer should have a smooth homogeneous surface free from imperfections; and the surface of the plates or molds should accordingly be

capable of receiving a high polish and smooth finish. In order to permit the use of the plates or molds commercially, the surfaces thereof should be capable of being cleaned without tarnishing and of retaining their lustre in the air. One of the objects of my invention is to provide a mold or transfer plate having the above named properties.

In its preferred form, the above mentioned process consists essentially in coating the surface of a blank mold or polished plate with a film of ingredients, which, upon being heated, forms on the mold surface a surface layer or veneer of a hard, infusible, phenolic condensation product containing plasticity ingredients, such that the veneer becomes sufficiently plastic upon being reheated to take an impression. The coating or film should preferably be applied to the mold in a plurality of very thin layers; so as to facilitate the drying thereof and to ensure against the presence of air bubbles in the same. The object to be surfaced is pressed into contact with this hardened veneer in the mold with the application of heat sufficient to cause the object and the surface layer to become firmly welded together, the molded object then being cooled and removed from the mold with the surface layer or veneer adhering thereto. The coated blank can then be reheated and pressed in a sound record or other mold to receive the desired impression upon the surface thus formed. The material applied to the blank surface may be a solution of a fusible, soluble, phenolic condensation product, such as the phenol resin described in an application of said Jonas W. Ayleworth, Serial No. 498,060, filed May 14, 1909, together with a hardening agent therefor containing the

methylene radical, such as hexa-methylene-tetra-amine, in a suitable solvent, such as amyl-alcohol. Penta-chlorophenol may be used as the plasticity ingredient in the surface composition. An object of my invention is to provide a mold or transfer plate of such a character that surface materials such as those mentioned above have no tendency to adhere to the same, the mold or transfer plate thus permitting the formation on the molded articles of a surface having the same finish as the mold surface. The mold should also not be affected by the substances in which the surface composition is dissolved or by substances, such as caustic soda, which may be employed for cleaning the same. Other objects of my invention will appear more fully in the following specification and appended claims:

As a result of experiments conducted with the above objects in view, I have found that the desired qualities for the purposes specified above are possessed by molds formed of or having a surface portion comprising metallic substances containing nickel. The nickel may appear in the mold in varying amounts or in different alloys; and the said substance may merely be employed for the surface portion of the mold, or the entire mold may be formed of the same. Pure nickel molds give the most satisfactory results; but the high cost thereof renders the same unsuitable for commercial use, a large number of molds being necessary for any considerable production. The substance which I prefer to employ is hard rolled German silver containing from 18 per cent to 20 per cent of nickel. This substance can be purchased at a reasonably low cost, so that the molds or plates may be made entirely of the same without a prohibitive cost. It can be gotten

practically free from flaws and can be readily given a very high polish. Other alloys of nickel may be used, but the results obtained therewith are not as satisfactory as with German silver. Monel metal, for example, which is an alloy of copper and nickel obtained from reducing certain ores, is very hard and satisfactory in most respects; but it cannot be gotten as free from flaws as German silver. Nickel plated brass may also be used; but the nickel coating is apt to peel off when many times subjected to the necessary pressure for transferring the surface veneer to the article coated. Also by the process described in my U. S. Patent No. 734,522, nickel may be coated upon iron or steel by electrolytically depositing the nickel on the iron or steel and in then subjecting the nickel-plated iron or steel to a welding temperature in a non-oxidizing atmosphere; but the product obtained in this way cannot be finished to as good a surface as German silver.

The mold surface may be polished in any suitable way. When employing German silver, this composition is preferably obtained in the form of rolled plates which have a comparatively even surface. The mold surface is preferably first given a rough polish with emery and is then buffed off with sand and later with lime, the mold surface obtained in this way being as smooth as glass.

In order that my invention may be better understood, attention is hereby directed to the accompanying drawing forming a part of this specification and in which the figure shows a central vertical sectional view illustrating the use of my improved molds or transfer plates in the molding of a sound record tablet. In the drawing,

the numerals 1 and 1' designate two of the molds or transfer plates, the numerals 2 and 2' surface veneers formed on the plates 1 and 1', the numeral 3 the base or article to be coated, and the numerals 4 and 4' fillings of surface composition coated on the base 3 prior to the transfer of the veneers 2 and 2' thereto to facilitate the adhesion of the surface veneers to the base. The numeral 5 designates the lower member of a suitable press. The plates 1 and 1' may be made of a thickness of approximately one-sixteenth of an inch or slightly more and are preferably formed with their peripheries slightly flanged so as to assist in the formation of the periphery of the molded article. *Insert B 7/15/13*

Having now described my invention, what I claim as new and desire to protect by Letters Patent of the United States, is as follows:

- Cancelled 6/14/13*
1. A record tablet mold having a polished surface, the surface portion of said plate being formed of a metallic substance containing nickel, substantially as described.
 2. A record tablet mold having a polished surface and formed entirely of a metallic substance containing nickel, substantially as described.
 3. A record tablet mold having a surface portion containing an alloy of nickel, substantially as described.
 4. A record tablet mold having a polished surface, the surface portion of said mold being formed of an alloy of nickel, substantially as described.
 5. A record tablet mold formed entirely of an alloy of nickel, substantially as described.

Cancelled 4/14/13

6. A record tablet mold having a polished surface and formed entirely of an alloy of nickel, substantially as described.

7. A record tablet mold having a surface portion of German silver, substantially as described.

8. A record tablet mold having a polished surface, the surface portion of said mold being formed of German silver, substantially as described.

Remember - see patent 811,996 on transfer plate 4/14/13
9. A record tablet mold formed entirely of German silver, substantially as described.
free from flaws 4/14/13

on transfer plate 4/14/13
10. A record tablet mold having a polished surface and formed entirely of German silver, substantially as described.
free from flaws 4/14/13

Cancelled 6/14/13
11. A record tablet mold having a surface portion of German silver containing at least eighteen per cent of nickel, substantially as described.

12. A record tablet mold having a polished surface, the surface portion of said mold being formed of German silver containing at least eighteen per cent of nickel, substantially as described.
Remember - see patent 811,996 on transfer plate 4/14/13

3
13. A record tablet mold formed entirely of German silver containing at least eighteen per cent of nickel, substantially as described.
free from flaws and 4/14/13

4
14. A record tablet mold having a polished surface and formed entirely of German silver containing at least eighteen per cent of nickel, substantially as described.
on transfer plate 4/14/13
free from flaws and 4/14/13

Cancelled 4/14/13
15. A record tablet mold having a polished surface, the surface portion of said plate being formed of a metallic substance free from flaws and containing nickel,

~~Substantially as described.~~

16. A record tablet mold having a polished surface and formed entirely of a metallic substance free from flaws and containing nickel, substantially as described.

Invent R. E. E. 5 8/4/13
Invent R. E. E. 1, 2, 3 7/15/14

This specification signed and witnessed this 30th day of April 1912

Thomas A. Edison

Witnesseth:

1. Frederick Bachman
2. Samuel P. Nelson

Oath.

State of New Jersey } ss.,
County of Essex }

THOMAS A. EDISON, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of Llewellyn Park, West Orange, Essex County, New Jersey,

that he verily believes himself to be the original, first and sole inventor of the improvements in RECORD TABLET MOLDS

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

Thomas A. Edison
Sworn to and subscribed before me this 30th day of April 1912

NOTARY PUBLIC IN AND FOR NEW JERSEY
COMM. EXPIRES JANUARY 1, 1913

[Seal]

Notary Public.

Div. 1E. Room 308

Address only
"The Commissioner of Patents,
Washington, D. C."

U-200 AS

Paper No. 2

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

Thomas A. Edison,

WASHINGTON

July 15, 1912.

c/o Frank L. Dyer,

Orange, N. J.

Please find below a communication from the EXAMINER in charge of your application.

for RECORD TABLET HOLDS, filed May 2, 1912, #694,658.

EDM:src!

Commissioner of Patents.

This case has been examined.

The claims are rejected on

Dunne, #730,102, June 2, 1903 (10 - 47),

showing a nickel mold facing, or

McDonald, #366,176, July 5, 1887 (same),

nickel or German silver.

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON,)
RECORD TABLET MOLDS,)
Filed May 2, 1912,) Room No. 308.
Serial No. 694,658.)

HONORABLE COMMISSIONER OF PATENTS.

S I R:

In response to the Office action of July 15, 1912, please amend the above entitled case as follows:

In line 19, page 1, after "the" insert

- subsequent - .

In line 1, claim 9, after "mold" insert - or transfer plate - ; and in line 2, same claim, after "silver" insert - free from flaws - .

In line 1, claim 10, after "mold" insert - or transfer plate - ; and in line 2, same claim, after "silver" insert - free from flaws - .

In line 1, claim 13, after "mold" insert - or transfer plate - ; and in line 2, same claim, after "silver" insert - free from flaws and - .

In line 1, claim 14, after "mold" insert - or transfer plate - ; and in line 2, same claim, after "silver" insert - free from flaws and - .

Cancel claims 1 to 8 inclusive, 11, 12, 15 and 16, and change the numerals of claims 9, 10, 13 and 14 to 1 to 4, respectively.

Add the following claim:

- 5. A record tablet mold or transfer plate having a polished surface and a flanged periphery and formed entirely of German silver free from flaws, substantially as described. -

REMARKS

The references cited by the Examiner have been carefully considered by the applicant, and the claims have been revised to point out more clearly the patentable features of applicant's invention.

Neither of the references discloses a record tablet mold or transfer plate formed entirely of German silver free from flaws. In the process for which applicant's invention is more particularly designed, the record composition is applied in fluid form to the surface of the transfer plate. In order to eliminate the tendency of the said composition to adhere to the transfer plate after hardening, it is necessary that the said plate be formed of a material free from flaws and capable of receiving a high polish. The transfer plate should also be capable of being repolished; and, as a thin surface coating or layer, such as described by Dunne, would soon be ground away in repolishing, the transfer plate should be homogeneous or formed entirely of the same material. Applicant has found that German silver is the only substance which can be obtained free from flaws and with the other necessary qualities at a sufficiently low price to permit the commercial use of transfer plates formed entirely thereof.

Claims 3 and 4 specify that the German silver contains at least 18% of nickel.

Claim 5, in addition to stating that the mold or transfer plate has a polished surface and is formed entirely of German silver free from flaws, differentiates from the references by stating that the mold or transfer plate has a flanged periphery.

The applicant has invented a new and improved
article of manufacture, and reconsideration and allowance
are accordingly respectfully requested.

Respectfully submitted,

THOMAS A. EDISON.

By Frank H. Lyon
his Attorney.

Orange, New Jersey.

June 14, 1913.

FB-KGK

Div. 15 Room 308

Address only
The Commissioner of Patents,
Washington, D. C.

2-260

C. S. F.

No.

Paper No. 4

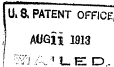
All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

Aug. 11, 1913.

Frank L. Dyer.

Orange, N. J.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison serial No. #604,658 filed May 2, 1912 for

Record-Tablet-Molds.

E. B. Moore

Commissioner of Patents.

4-2-201

Responsive to amendment filed June 16, 1913.

Claims 1 to 4 inclusive are rejected on the references of
record. McDonald for instance notes explicitly the utility of german
silver as facing material for mold structure.

Claim 5 is rejected on

Hickerson #285,057 Sept. 18, 1883 (18-47) which shows a
mold with polished surface and flanged periphery. Whether the surface
layer be of nickel or german silver is immaterial as affects patent-
ability. Both equivalents are shown in the art of record. See C. S.

McDonald.

*See serials
note from
McDonald
and record*

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON,)
RECORD TABLET MOLDS,)
Filed May 2, 1912,) Room No. 308
Serial No. 694,658.)

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to the Office action of
August 11, 1913, please amend the above entitled case as
follows:

At the end of line 12, page 5, insert the
following sentence:

B - The mold surfaces of the plates 1 and 1', as
shown, are smooth and even from the center of the plates
to their peripheries, so that there is no danger of the
record material adhering to the mold surfaces - .

Rewrite the claims as follows:

1. A record tablet mold or transfer plate consisting
of a flat plate of German silver free from flaws and having a
highly polished ⁷⁻¹⁴⁻¹³ ~~even~~ mold surface ^{free from projections and depressions and 7-14-13} extending over substantially
the entire face of said plate, substantially as described.
2. A record tablet mold or transfer plate consisting
of a flat plate of German silver free from flaws and having a
flanged periphery and a highly polished ⁷⁻¹⁴⁻¹³ ~~even~~ mold surface ^{free from projections and depressions and 7-14-13} extending over substantially the entire face thereof, sub-
stantially as described.
3. A record tablet mold or transfer plate consisting
of a flat plate of German silver free from flaws and con-
taining at least 18% of nickel, said plate having a highly
polished ⁷⁻¹⁴⁻¹³ ~~even~~ mold surface ^{free from projections and depressions and 7-14-13} extending over substantially

the entire face thereof, substantially as described.

R E M A R K S

It is thought that the references do not anticipate applicant's invention, but the claims have been rewritten to more clearly define the invention. Applicant's problem as fully set forth in the specification is thought not to be contemplated in the references; and the features of the invention which adapt the same particularly for the solution of said problem are thought now to be brought out in the claims. All of the latter now specify a flat plate of German silver free from flaws and having a highly polished even mold surface extending over substantially the entire face of the plate. Claim 2 also specifies that the plate has a flanged periphery, and claim 3 that it contains at least 18% of nickel. By reason of these limitations, the claims are thought to be clearly patentable. Referring to the patent to Nickerson cited by the Examiner in the last Office action, it is thought that a thin veneer could not be readily stripped off the irregular and uneven mold surface shown in the said patent without such injury to the molded surface of the veneer as would be fatal to the surface of a sound record tablet.

It is thought that the claims are patentable, and reconsideration and allowance are accordingly respectfully requested.

Respectfully submitted,

THOMAS A. EDISON,

By Frank L. Myers

his Attorney.

Orange, New Jersey,

July 15, 1914.

FB-KOK

DIV. 15 Room 308

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"The Commissioner of Patents,
Washington, D. C.,"
and not my official by name.

2-200

OFF

Mo.

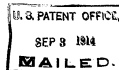
Taper No. 6.1X
All communications respecting this
application should give the serial number,
date of filing, title of invention, and
name of the applicant.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

Sept. 3, 1914.

Frank L. Dyer.

Orange, N. J.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Wilson serial No. 4594,608 filed May 2, 1912 for

Record Tablet Molds.

44-201

Thomas Ewing
Commissioner of Patents.

Responsive to amendment filed July 16, 1914.

The claims are rejected for want of invention over the
references of record.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

RECORD TABLET HOLDS

Filed May 2, 1912

Serial No. 694,668

Room No. 308.

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of September 3, 1914, please amend the above entitled case as follows:-

Claim 1, line 3, cancel "even", and after "surface" insert - free from projections and depressions and - .
Line 4, change "of said plate" to - thereof - .

Claim 2, line 3, cancel "even", and after "surface" insert - free from projections and depressions and - .

Claim 3, line 4, cancel "even", and after "surface" insert - free from projections and depressions and - .

R E M A R K S

The claims as presented are thought to patentably distinguish from the references. The patent to McDonald does not show a flat plate of the type specified in the claims. The patent to Nickerson does not disclose a plate made of German silver, nor does it disclose a plate free from projections and depressions, as specified in the claims. The patent to Dunn does not disclose a plate of German silver nor does it disclose a plate having the flanged periphery specified in claim 2.

Reconsideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Rye
His Attorney

Orange, N. J.

July 14, 1916

FB-JS

Div. 1st Room 308

(Covered)
"The Commissioner of Patents,
Washington, D. C.,"
and not any official by name.

2-260

H. D. B.

No.

Paper No. 8

All communications respecting this
application should give the serial number,
date of filing, title of invention, and
name of the applicant.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

Aug. 10, 1915

Frank L. Dyer,

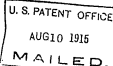
Orange,

N. J.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Serial No. 694,456, filed May 2, 1910, for

Record Tablet Molds.



Thomas Edison
Commissioner of Patents

2-2-2011

In response to the amendment filed July 15, 1915:

The claims are rejected on the references and for the reasons of record. As regards the flanged periphery construction, it will be noticed that this relationship is shown in Hicker-son.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

RECORD TABLET MOLDS

Room No. 306.

Filed May 2, 1912

Serial No. 694,658

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of

August 10, 1915.

The references of record have again been carefully considered, and it is thought that the same do not anticipate the claims. The invention is a very special kind of device which is not disclosed in the prior art, and it is thought that a patent should not be withheld upon the same merely because of its simplicity. None of the references shows a device intended for use as a transfer plate intended to receive a veneer which is subsequently welded or secured to a backing. It is not seen how the cylindrical tube D of Macdonald resembles the flat transfer plate of applicant. The patent to Dunne does not show a German silver transfer plate having a flanged periphery. The device of Nickerson is very different from that claimed. Instead of being made with German silver it is made with a soft base covered with a thin coating of nickel. In such a device, the nickel would peel off the base and render the mold entirely unsuited for the production of satisfactory

sound record tablets. Furthermore, the die of Hickerson
is not a mold surface free from projections and depressions.

For the above reasons, reconsideration and allow-
ance are respectfully requested.

Respectfully submitted,

THOMAS A. EDISON

By

Frank L. Dyer

His Attorney

Orange, N. J.

July 21, 1916.

FB-JS

DIV. 15. ROOM 308

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2-260

H. D. R.

Paper No. 19

All communications respecting this
application should give the serial number,
date of filing, title of invention, and
name of the applicant.

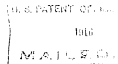
DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

July 26, 1916

Frank L. Dyer,

Orange,

New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Wilson, Serial No. 694,658, filed May 2, 1912, for

Record Tablet Molds.

Thomas Ewing
Commissioner of Patents

4-201

In response to the letter filed July 22, 1916:

The claims are finally rejected upon the references and
for the reasons of record.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison
RECORD TABLET MOLDS
Filed May 2, 1912
Serial No. 594,558

HONORABLE COMMISSIONER OF PATENTS,

S I R :

I hereby constitute and appoint DYER & HOLLEN (Registration No. 3244), a firm composed of Frank L. Dyer and Delos Holden, whose address is Edison Office Building, Orange, New Jersey, as my associates in the prosecution of the above entitled application, and request that all correspondence be addressed to them until further notice.

Respectfully,

Frank L. Dyer.

Orange, N. J.
January 10, 1917.

Recd. Apr. 17, 1912
G. B. Adams

Application

Legal Dept
April 17, 1912

Recd. Apr. 19, 1912
J. M. Adams

The invention consists in Varnish, a polished metallic disc with several layers of Varnish ~~being~~ giving the varnish a heat treatment & transferring such compound layers to the blank of a disc phonograph record. The whole of which ~~the~~ layers transferred being free from solids -

(This I understand has been applied for - has it not - S. B. Z.)

The particular improvement is the use of nickel or nickel alloys which I have found alone suitable for the surface holding the varnish layers to be transferred for the reason that the Varnish has ~~no~~ no tendency to stick to polished nickel or its alloys & it can be cleaned without tarnishing & return to luster in the air.

Rec'd Apr. 11, 1914
J. G. Cochran

Paris nickel disks $\frac{1}{16}$ inch thick are the best
but are too expensive as a very great number
must be used to obtain any considerable
production. Monel metal which is a natural
alloy of Copper & Nickel is obtained from
reducing certain ores is very hard & suitable
but it cannot be got rid of flaws -
Nickel plated brass discs can be used
but the nickel coating is apt to peel off
when many times subjected to the
necessary pressures for transferring very
~~the~~ hard rolled German Silver with
15 to 20% of Nickel & have found
suitable as it can be got very
free of flaws & easily polished
Claim for this Nickel or alloys
for the purpose

50
J. G. Cochran

June 20, 1917

Mr. Edison:

Application Serial No. 694,658, Filed May 2, 1912
entitled RECORD TABLET MOLDS.

This application covers the polished German silver transfer plates formerly used by us in the manufacture of our disc records. The application has been finally rejected, and Mr. Holden and I think that it should be dropped because the device is no longer used by us, and also because it would probably be impossible to obtain ~~any~~ ^{any} claims on same from the Patent Office.

Please advise if you wish to have the same dropped.

H. Bachmann

FB-EH

13

Patent Series
Patent Application Files

Folio # 852 Electrical System for Automobiles

U.S. Patent #: 1192400

Primary Applicant: Edison, Thomas A

Date Executed: 5/20/1912

Practical Legal Dept
Feb 20 1912

Received April 20, 1912
Henry Canahan

The object is to crank or start the engine of a gasoline auto by the use of an electric motor and storage battery - to light the auto by electric lamps from the same battery as well as the use of current for ignition of the gasoline and at the same time render it unnecessary the use of any automatic regulation of the ^{and range of} voltage ~~of lamps~~ when the battery is connected intermittently with the dynamo thus ^{conserving} ~~prolonging~~ the life of the incandescent lamps which is especially shortened when there is no regulation in charging the nickel hydraline storage battery

The invention consists in using ~~the~~ a motor to start the car a ~~motor~~ dynamo to charge the battery and a double battery half of the cells being on charge while the other half is lighting the lamps & igniting with the whole of the battery is used for starting & a switch for throwing ^{the battery on or off} ~~over~~ the other action of the battery -

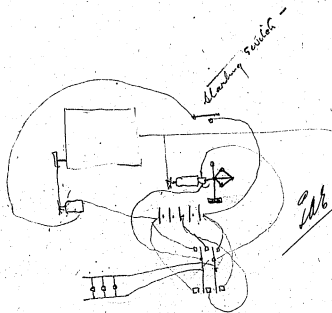
It further consists in using lamps which have a voltage considerably higher than the average voltage of the battery in discharging - ~~that is~~ so that the chaffers will be induced to shift the 2 sections of the battery frequently & thus prevent any great variation in candle power of the lamps.

Get information from Bliss - Ford is being fixed up now & is probably ready -

etc

April 19 1912

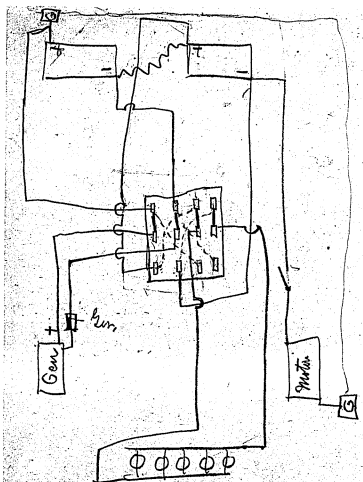
WZ



Double pole switch
for hand starting

2nd Sketch
at H. H. Harris
April 20 1912

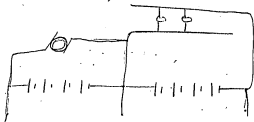
Received from Mr. Harris
April 20, 1912
H. H. Harris



Sketch of Circuit for Ford Car
 Haining, Wash.
 R. S. by Lewis 4/25/12

Kookogey 406.354
Biddle 539.500
Cormack 901.423

each show two separate groups
of storage battery cells with
means for charging one set
while the other set is
discharging into a lighting or
other circuit



cc e
note

Applicant is not claiming the broad combination
of an internal combustion engine and
means deriving power from the engine
for charging the battery

Patent Series

Patent Application Files

Folio # 853 Means for Concentrating Ores

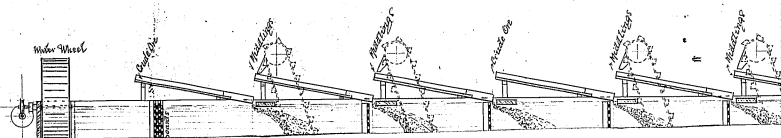
U.S. Patent #: 1167638

Primary Applicant: Edison, Thomas A

Date Executed: 5/21/1912

Legal Dept-

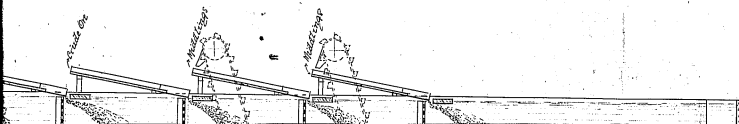
ORE CONCENTRATOR



[FILMED IN SECTIONS]

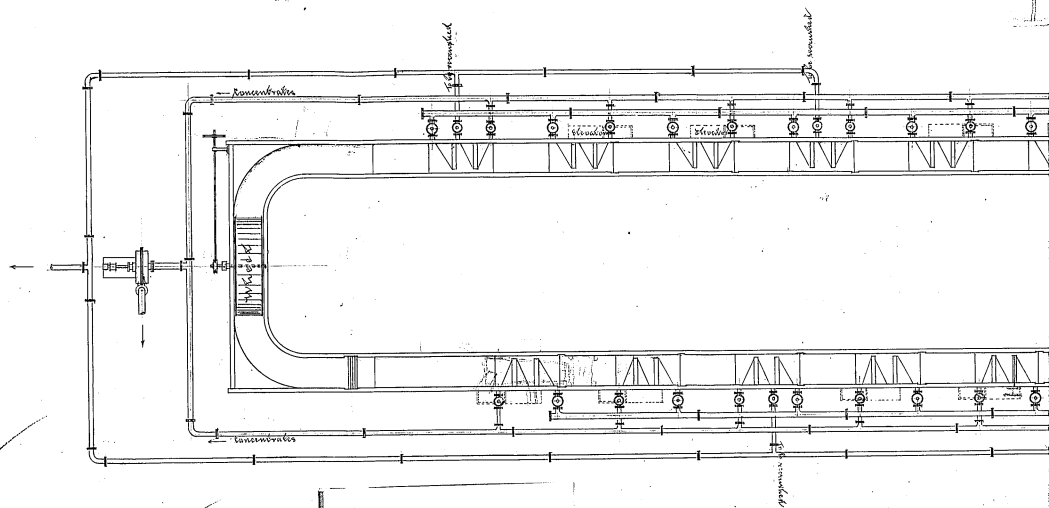
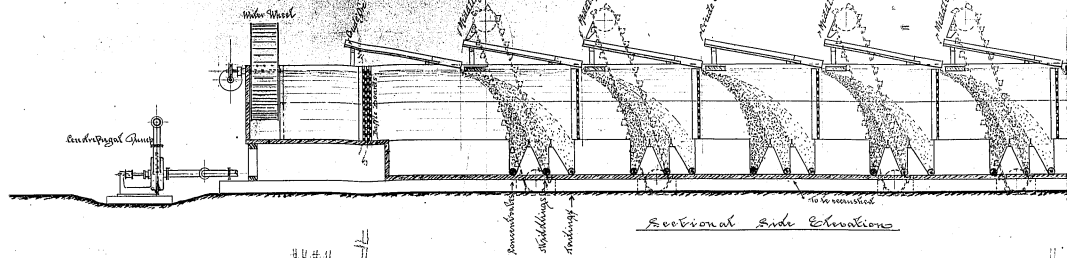
1	2
3	4

CONCENTRATOR



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3	4



*gxp
Apr 22/12*

[FILMED IN SECTIONS]

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3	4

Plan

CABLE ADDRESS.-MUNCHENHEIM - NEW YORK

TELEPHONE ADDRESS.-2100 BRANT



Hotel Astor
TRINIS SQUARE
New York

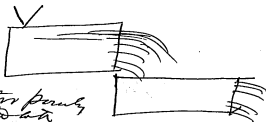
W. G. MUNCHENHEIM
P. A. MUNCHENHEIM

June 8/1912

My dear Mr. Munchheim.

Mr. Edison wanted
to study the action & send
up & put the papers. Mr.
Bullentone will return them
to you

The one that looked like
was over a single sheet
with open end



with water pencil
in it at the end

Mr. Edman did not
consider them either of the
class.

The other one had no
happles, & the wheeling
flat.

You study the system
of our feet & the the
Mudwing & Elevator
& the tails & I think
you will see no ambiguity
with kind regards

Yours
Wm. J. Edman

Malden, Alaska
U.S.

Patent Series
Patent Application Files

Folio # 861 Means for Charging Storage Batteries

Serial #: 704338

Primary Applicant: Langley, Sam G

Date Executed: 6/14/1912

[PHOTOCOPY]

File No. 180

Serial No. 70-338

Applicant.

Address.

Sam S. Langley

Title *Means for Charging Storage Batteries*

Filed *June 18, 1915*

Examiner's Room No.

Assignee *Thomas F. Edison, Inc. - New York, N.Y.*

Ass't. Exec. *June 18/15* Recorded *June 18/15* Liber. 2, 19 Page 361
Nov. 4/16 *Nov. 11/16* *2, 101, 11 211*

Patent No.

Issued

ACTIONS.

Office letter Feb. 4 - 1913. 10
Amended Jan. 31 - 1914. 17
Reprinted Apr. 29 - 1914. 18
Amended April 9, 1915. 19
Rejected June 22, 1915. 20
Amended June 15, 1916. 21
Allowed July 22, 1916. 22
Final order Jan. 22, 1917. 23
Amended under Rule 29. 24
Amendment approved Jan. 11, 1916. 25
Notice to Pate Jan. 9/1917. 26
27
28
29
30

VAULT

FRANK L. DYER,

Counsel,
Orange, New Jersey.

Petition.

To the Commissioner of Patents:

Your Petitioner **SAM C. LANGLEY**
a citizen of the United States, residing and having a Post Office address at
#162 Valley Road, West Orange, Essex County, New Jersey

prays that letters patent may be granted to him for the improvements in

MEANS FOR CHARGING STORAGE BATTERIES

set forth in the annexed specification; and he hereby appoints **Frank L. Dyer**
(Registration No. 560), of Orange, New Jersey, his attorney, with full
power of substitution and revocation, to prosecute this application, to make
alterations and amendments therein, to receive the patent, and to transact all
business in the Patent Office connected therewith.

Sam C. Langley

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, SAM C. LANGLEY, a citizen of the United States, and a resident of West Orange, in the County of Essex and State of New Jersey, have invented certain new and useful improvements in MEANS FOR CHARGING STORAGE BATTERIES, of which the following is a description:-

My invention relates generally to means for charging storage batteries, and particularly to apparatus and a system for charging such batteries in which one or more rectifying devices are employed to convert alternating current into uni-directional current which is supplied to the battery to charge the same. In a system of this character it is desirable to provide means for preventing discharge of the storage battery through the rectifying devices or other parts of the system in case of failure of current supply from the source or in case of abnormal decrease in voltage of the same. / One of the objects of my invention is the provision of an automatic switch constituting simple and efficient means for this purpose. Another object of my invention is the provision of apparatus constituting a complete charging set capable of being compactly assembled and mounted, and adapted to be connected to a suitable source of alternating current and to a storage battery for charging the same. My invention includes also the combinations of elements and details of construction more fully described hereinafter and claimed.

→ Serial D- 12-21-16

For the further description of my invention, reference is had to the drawings accompanying and forming part of this specification, and in which -

Figure 1 is a partly diagrammatic view of a charging system including a complete charging set embodying my invention connected to a source of alternating current and to a storage battery;

Figure 2 is a vertical section of a simplified form of a rectifying device which I prefer to employ in my improved system;

Figure 3 is a side elevation of my improved automatic switch, with the contacts closed;

Figure 4 is a plan view of the same, with the contacts open;

Figure 5 is a vertical view at right angles to the view of Figure 3, (the upper portion being sectional and the lower portion in elevation); and

Figure 6 is a horizontal section on the line 6-6 of Figure 5.

My improved automatic switch is illustrated in Figs. 3 to 6 inclusive. Referring particularly to these figures, at 10 is shown a supporting member which may be made of a single piece of sheet metal and which has a horizontal portion 11, portions 12 and 13 extending vertically upwards, (and a horizontal portion 14 extending outwardly from the upper end of the vertical portion 13). The supporting member 10 supports the parts of my improved automatic switch and may be secured to any suitable base member 15. If the base member 15 is of conducting material, the

supporting member 10 is preferably insulated therefrom, but if the base member 15 is of insulating material, further insulating means are not necessary in securing the supporting member 10 to the base member 15. On the horizontal portion 14 of the supporting member 10 a solenoid is mounted, which includes a vertically disposed hollow spool 16 which may be made of metal and is preferably non-magnetic, and which is secured to the portion 14 in any suitable manner, as for example, by soldering. The spool 16 is provided with a high resistance solenoid winding 17 suitably insulated from the spool. In the hollow core of the spool a plunger is provided, the lower portion 18 of which consists of magnetic material and is preferably of soft iron, and the upper portion 19 of which consists of non-magnetic material, such as brass or copper, preferably hollowed out to reduce its weight. The upper non-magnetic portion of the plunger is provided with a shoulder 20 or other suitable means for limiting the downward movement of the plunger, and also with a vertical slot 22 through which passes a pin 21 soldered or secured in any other suitable manner to the top of the spool 16 and serving to limit the upward movement of the plunger. In the operation of the device, the pin 21 permits the plunger to rise to a position which is substantially its position of equilibrium for the normal strength of current carried by the coil 17. By having the lower portion of the plunger of soft iron and the upper portion of hollow non-magnetic material, the entire plunger is elevated to the desired position in the solenoid without necessitating the use of such an amount of iron as would

render the plunger unduly heavy, and greater sensitiveness of operation is thereby attained. The lower end of the plunger is provided with a piece of insulating material 25 secured thereto to prevent the plunger from coming into electrical contact with the metallic member 56 upon which it impinges when it moves into lowered position.

On the upwardly extending vertical portion 13 of the supporting member 10 (and beneath the portion 14), horizontal electro-magnets are mounted, the said electro-magnets comprising magnetic cores 24 and 25, one end of each core being secured to the portion 13 in any suitable manner, as for example, by screws, the core 24 having a winding 26 surrounding it and insulated therefrom, and the core 25 having a winding 27 surrounding it and insulated therefrom. The ends of the cores 24 and 25 which are farthest from the portion 13 are provided with projecting pins of non-magnetic material constituting guides for an armature 30 of soft iron which is elongated in form and has openings near its ends to receive the guides 28 and 29. The armature 30 is provided with a member 31 preferably of non-magnetic material secured at right angles thereto and extending horizontally through an opening 32 in the upright portion 13, the said upright portion 13 thereby constituting a guide for the member 31. On the portion of the member 31 which extends through the upright portion 13 ⁱⁿ a collar 33 or other suitable means is provided for limiting the movement of the armature 30 away from the cores 24 and 25 of the electro-magnets.

On the upwardly extending portion 12 of the supporting member 10 a contact 34 is mounted and suitably insulated therefrom. The contact surface of this contact faces the end of the member 31 which extends through the opening 32 on the upwardly extending vertical portion 12. The contact 34 is preferably a metallic disc or block and is provided with a reduced portion 57 extending through an opening in the upright portion 12, and with a threaded stem 97. The threaded stem is provided with a nut 35 which co-operates with the disc or block 34 and with insulating washers to hold the contact in place on its support, and with washers 36 and a nut 35' which afford means for connecting the terminal 34 in the battery circuit. On the upright portion 12 is also mounted a spring contact 37 which consists of an elongated portion and end portions 39 and 38 bent back approximately parallel to the elongated portion when the contact is in closed position. The portion 39 of the spring contact 37 is secured to the upwardly extending vertical portion 12 by any suitable means, as for example, a bolt and nut 40. At the end of the portion 38 an inturned projection 42 is provided which co-operates with a slot 41 in the upright portion 12 to position the contact against rotary displacement around the bolt 40. The head of the bolt 40 co-operates with a washer to connect the contact in circuit. The end of the portion 39 of the spring contact 37 is split into a plurality of parts, which constitute contact faces co-operating with the contact 34, and insure adequate contact therewith.

On account of the resiliency of the spring contact 37, the portions 38 and 39 tend to spring out of parallelism with the elongated portion of the spring, whereby the portion 39 is moved away from the contact 34 as is illustrated in Fig. 4. When, however, the windings 26 and 27 are energized, the armature 30 is attracted towards the cores 24 and 25, and the contacts 37 and 34 are forced into closed position by the end of the member 31. It is to be observed that the entire length of the spring contact 37, including the bent back portion 39, is effective in exerting pressure against the actuating member 31, and that, on account of the shape of the spring, this pressure is great when the armature 30 is in contact with or nearest the cores 24 and 25. The bent back portion 39 contributes materially to forcing the armature 30 away from the cores, which effectually overcomes any tendency of the armature to stick to the cores.

A plate of insulating material ⁴³ ~~has~~ one end secured to the under side of the horizontal portion 14 and serves as a support at its other end for a hollow tube 44, which is made of metal, as for example, brass, and which is screw threaded at its lower end into the insulating plate 43. At the upper end of the tube 44 a plug 47 of insulating material is inserted, through which extends a conducting member 46 screw threaded at its upper end and provided with a contact 45 at its lower end. The upper end of the member 46 is provided with nuts 48 and 49 and washers 50 which serve to connect a conductor in circuit, the nut 49 serving also

to secure the member 46 in the insulating plug by co-operation with a headed portion at the other end of the said member 46. In the lower portion of the tube 44 and extending through the bottom thereof and through the insulating plate 43 is an elongated member 52 provided at its upper end with a contact 51 and screw threaded at its lower end. A coiled spring 59 encircles the member 52 within the hollow cylinder and is located between a shoulder on the upper portion of the member 52 and a shoulder in the lower portion of the tube 44, thereby tending to elevate the member 52 and to force contact 51 into contact with the contact 45. A bracket 54 is held in place on the insulating plate 43 by the cylinder 44, the lower end of the cylinder being extended through a portion of the bracket lying on the upper surface of the insulating plate 43. The bracket 54 is insulated from the horizontal supporting portion 14 by the insulating plate 43. The bracket 54 is provided with lugs 55, upon which an elongated member 56 of light weight, which may be made of fairly stiff sheet metal, is pivotally supported. The member 56 has an opening through which the lower end of the member 52 passes loosely, and nuts 53 are provided at the lower end of the member 52 and beneath the elongated member 56 in such a manner that the elongated member 56 is supported in an approximately horizontal position and its free end is located immediately beneath the insulating block 23 of the plunger 18. Upon failure of current or abnormal decrease in current strength of the coil 17, the plunger 18 drops by gravity and impinges upon the free

end of the pivoted member 56, thereby depressing the member 52 against the action of the spring 59 and separating the contacts 45 and 51. The bracket 54 is provided with a screw and washer 50 for connecting the bracket in circuit. It will be observed that the bracket 56 ⁵⁷ is in electrical connection with the tube 44 and the contact 51.

In Figure 1, in which a complete charging set embodying my invention is illustrated, 72 and 73 are terminals adapted to be connected to alternating current mains 70 and 71 respectively which are supplied with alternating current from any suitable source. Terminals 84 and 85 are provided, which are adapted to be connected to a storage battery and are shown connected to the storage battery 86. At 74 and 75 respectively are shown the primary and secondary of a transformer, suitably designed to transform the current from the source 70 and 71 to a voltage suitable for charging the storage battery. The terminal 72 is connected to a junction point 76, to which one terminal of the primary winding 74 is connected. The other terminal of the primary winding is connected to one terminal of an adjustable rheostat 78, the other terminal of the rheostat being connected to a junction point 77. The junction point 77 is connected to a contact 79 of a double pole manually operated switch 82, which is provided with a contact 80 adapted to be connected to the contact 79 by the switch blade 81 and with contacts 87 and 88 adapted to be connected together by the switch blade 89. Switch blades 81 and 89 are provided with a common handle for opening and closing the switch. The switch contact 80 is con-

7

needed to the terminal 73. When the switch 82 is closed, the primary 74 of the transformer is connected across the alternating current mains 70 and 71 through the switch blade 81 and the adjustable rheostat 76. A suitable rectifying device or devices are provided. I have illustrated four such devices A, B, C and D, which are preferably of the type of rectifying devices described and claimed in my application Serial No. 702,187, filed June 7, 1912. Each of these rectifying devices includes a permanent magnet 60 having an almost closed magnetic circuit. In the gap of the magnetic circuit of the permanent magnet 60 one or more soft iron armatures 61 and 62 are pivotally mounted at their lower ends on the permanent magnet or on a suitable frame which may also be used for supporting the magnet. Armatures 61 and 62 are provided at their upper ends with suitable contacts 63 and 64 respectively which are preferably of carbon. The vibrating contacts 63 and 64 co-operate with the stationary contact 65. Surrounding the armatures 61 and 62 is an actuating coil 66. When the actuating coil is supplied with alternating current an alternating magnetic flux is set up in the soft iron armatures 61 and 62, making of their upper ends alternately north and south poles. When the upper ends of the armatures are north poles, the south pole of the permanent magnet is strengthened and the north pole is weakened, and vice versa. The armatures are therefore vibrated in synchronism with the alternating current in the actuating coil and open and close a circuit containing the stationary contact 65 and the vibrating contacts 63 and 64. The vibrating contacts 63 and 64 are

connected together through the armatures and their supporting means, including the permanent magnet or the frame. In the system illustrated, the actuating coils of the devices A, B, C and D are connected in series by a conductor extending from the junction point 76 through a condenser 83 to the junction point 77. The actuating coils are therefore connected in series across the terminals 72 and 73 and across the alternating current mains 70 and 71 when the terminals 72 and 73 are connected to the mains. The condenser 83 is adjusted so as to advance the phase of the current in the actuating coils to a sufficient extent to compensate for the inductance of the coils and for the inertia of the armatures, and to insure the making and breaking of the rectifying circuits at the proper times to reduce or substantially prevent sparking. One terminal of the secondary 75 is connected by conductor 90 to the terminal 84 which is connected to the storage battery 86, and the other terminal of the secondary 75 is connected by a conductor 87 to the spring contact 37 of the automatic switch. The fixed contact 34 of the automatic switch is connected by conductor 93 to the armatures and vibrating contacts of two of the rectifying devices, as for example, the devices A and C. The fixed contacts of the rectifying devices A and C are connected to the vibrating contacts and armatures of devices B and D by conductors 68 and 69 respectively. The fixed contacts of the devices B and D are connected together and to the contact 88 of the manually operated switch 82 by means of conductor 92. The contact

87 of the manually operated switch 82 is connected to the terminal 85 by conductor 91, the terminal 85 being connected to the storage battery 86. The winding 17 of the solenoid is connected between the junction points 76 and 77 and is therefore connected across the terminals 72 and 73 and alternating current mains 70 and 71 connected thereto through switch blade 81 of manually operated switch 82. The electro-magnet windings 26 and 27 are connected in series across the battery terminals and in series with contacts 45 and 51, the circuit being as follows:- From terminal 84 through conductor 94 to magnet winding 27, through magnet winding 26, conductor 95, bracket 54, cylinder 44, contact 51, contact 45, conductor 96, the conductor 96 being in electrical connection with the fixed contacts of rectifying devices 2 and 3, which contacts are in electrical connection with terminal 85 through conductor 92, switch contact 88, switch blade 89, switch contact 87 and conductor 91.

The operation of the system is as follows:-
When the terminals 72 and 73 are connected to mains 70 and 71 supplied with alternating current and the switch 82 is closed, the solenoid winding 17 is energized, the core 18 is elevated into its upper position, and the contacts 45 and 51 are permitted to close. The magnet windings 26 and 27 are then energized ¹²⁴⁴ from the storage battery (ex-by-rectified current supplied from the rectifying system), the armature 30 is attracted to the cores 24 and 25, contacts 37 and 34 are closed by the action of the member 31 secured to the armature 30, and the battery is connected in circuit with the rectifying system. The armatures of the rectify-

(While the battery is being charged in the rectifying system, it separates with the battery an supplying current to the magnet windings 26 and 27)

ing devices are vibrated in synchronism with the alternating current to be rectified, and the contacts of each device are closed during alternate half waves of alternating current and opened during the remaining half waves. The path of the rectified current is as follows:- Starting at the left hand end of the secondary 75, through conductor 90, to terminal 84, through storage battery 86 to terminal 85, through conductor 91, switch contact 87, switch blade 89, switch contact 88, conductor 92, to the fixed contacts of rectifying devices B and D. At this point the current divides, one path being through contacts and armatures of rectifying device B, through conductor 68 to contacts and armatures of rectifying device A, and to conductor 93; the other path being through contacts and armatures of rectifying device D, conductor 69, contacts and armatures of rectifying device C, to conductor 93, and uniting with the other branch of the circuit, and thence through conductor 93 to fixed automatic switch contact 34, spring contact 37, conductor 67, and back to the right hand end of the secondary 75 of the transformer. In this manner unidirectional current is supplied to the battery to charge the same, and the strength of the charging current may be regulated by the adjustable rheostat 78 in circuit with the primary 74 of the transformer. ^{Don't A 14014} If for any cause there is a failure of the current supplied to the alternating current mains, or if the voltage drops abnormally, for example, to such an extent as to reduce the voltage of the charging current below the battery voltage, the plunger of the solenoid will be permitted to drop, impinging upon the member

(56, and separating contact 51 from contact 45 against the action of the spring 59, the tension of the spring 59 and weights of the member 56 and the plunger of the solenoid being properly proportioned to produce this result. The separation of contacts 51 and 45 causes the circuit through the magnet windings 26 and 27 to be broken, and the resiliency of the spring contact 37 forces the armature 30 away from its core and separates contact 37 from contact 34, thereby breaking the circuit between the battery and the rectifying devices, and preventing any possible discharge from the battery through the rectifying devices.) When current comes on again in the mains 70 and 71 or the voltage rises to the required amount, the solenoid winding 17 is immediately energized, the core 18 elevated out of contact with the member 56, permitting the closing of the contacts 51 and 45, thereby closing the circuit through the magnet windings 26 and 27, which causes the cores 24 and 25 to attract the armature 30 and thereby close contact 37 against contact 34, thus re-establishing the connection between the rectifying devices and the storage battery. Obviously, opening the hand operated switch 82 de-energizes the solenoid winding 17 and causes the battery circuit to be opened at contacts 37 and 34. Furthermore, when the hand operated switch 82 is opened, there is no sparking at the contacts of the automatic switch because the circuits are broken first at the hand operated switch.

By having the plunger 18 disconnected from the contact which it is to operate, the evil effects of chattering, which are liable to occur in alternating current

apparatus, are obviated. That portion of the device including the solenoid winding 17 and the contacts 45 and 51 acts as a relay for the electro-magnets 26 and 27 which control contacts 34 and 37 carrying large currents. In my improved apparatus I am enabled to combine sensitiveness and positiveness of action, and no chattering whatever occurs.

Having now described my invention, what I claim as new therein and desire to protect by Letters Patent is as follows:-

- Amended - sheet C - 1/10/11*
1. In a system of the class described, the combination of a storage battery and means for supplying unidirectional current thereto, including a source of alternating current, rectifying means, and means controlled by the said source for controlling the connection of the battery to the rectifying means, substantially as described.
 2. In a system of the class described, the combination of a storage battery and means for supplying unidirectional current thereto, including a source of alternating current, rectifying means, and automatic means for maintaining the connection of the battery to the rectifying means while the voltage of the source is in excess of a predetermined value and for breaking the connection when the voltage of the source falls below said value, substantially as described.

3. In a system of the class described, the combination of a storage battery and means for charging the same, including a source of alternating current, rectifying means, a manually operated switch, and an automatic switch governed by the voltage of the source for controlling the connection and disconnection of the battery and rectifying means, said automatic switch being operable to connect the battery and rectifying means only when the manually operated switch is closed, substantially as described.

4. In a system of the class described, the combination of a storage battery and means for charging the same, including a transformer having primary and secondary windings, rectifying means, an automatic switch having a winding supplied with current from the primary and having contacts controlled by said switch winding for making and breaking connection between the battery and the rectifying means, and a manually operated switch for controlling the automatic switch circuit and the battery connection, substantially as described.

Cancelled Feb/14
5. In apparatus of the class described, a fixed contact, a movable contact co-operating therewith, a solenoid, and a plunger for the solenoid for controlling the movable contact but disconnected therefrom, substantially as described.

6. In apparatus of the class described, a stationary contact, a movable contact spring-pressed into circuit

closing position, a member loosely connected with said movable contact for moving the same out of circuit closing position, a solenoid, and a plunger held free from said member when the solenoid is energized, but located to impinge upon said member when the solenoid is de-energized to cause separation of the fixed and movable contacts, substantially as described.

7. In apparatus of the class described, an insulating plate, a hollow cylinder mounted on one end thereof and vertically disposed, a stationary contact mounted on the upper end of the cylinder and insulated therefrom, an elongated member extending through the bottom of the cylinder and the insulating plate and having in its upper end a contact adapted to co-operate with the fixed contact, a spring for closing said contacts, a pivoted member operatively related to the movable contact-carrying member so that when the free end of the pivoted member is depressed the movable contact is separated from the fixed contact, a solenoid mounted vertically on said insulating plate, and a gravity-actuated plunger for the solenoid located to impinge upon the free end of the pivoted member when the current in the solenoid is reduced a predetermined amount, substantially as described.

8. In apparatus of the class described, fixed and movable contacts, a solenoid having a gravity actuated plunger unconnected to said contacts but located to separate the same when the solenoid is de-energized, and an electro-magnet having its circuit controlled by said contacts, substantially as described.

9. In apparatus of the class described, fixed and movable contacts, a solenoid having a gravity actuated plunger unconnected to said contacts but located to separate the same when the solenoid is de-energized, an electro-magnet having its circuit controlled by said contacts, and an additional contact controlled by said electro-magnet, substantially as described.

10. In apparatus of the class described, a vertically disposed solenoid and a plunger therefor having its lower portion of magnetic and its upper portion of non-magnetic material, substantially as described.

11. In apparatus of the class described, a vertically disposed solenoid and a plunger therefor having its lower portion of magnetic and its upper portion of non-magnetic material, said plunger having means for limiting its downward movement, substantially as described.

12. In apparatus of the class described, a vertically disposed solenoid and a plunger therefor having its lower portion of magnetic and its upper portion of non-magnetic material, said plunger having means for limiting its upward and downward movements, substantially as described.

13. In apparatus of the class described, a vertically disposed solenoid and a plunger therefor having its lower portion of magnetic and its upper portion of non-magnetic material, said plunger having means for limiting its downward movement, and having an insulating member secured to its lower end, substantially as described.

14. In apparatus of the class described, a spring contact having a central elongated portion and ends bent back toward each other, one of said ends being split to form a flexible contact face, substantially as described.

15. In apparatus of the class described, a supporting member, a pair of electro-magnets supported horizontally thereon, an armature for the electro-magnets, guiding means for the armature, and a horizontally disposed extension on the electro-magnet ^{armature} having its free end extended through the supporting member, substantially as described.

16. In apparatus of the class described, a supporting member, a pair of electro-magnets supported horizontally thereon, an armature for the electro-magnets, guiding means for the armature, a fixed contact and a movable contact co-operating therewith and normally biased out of circuit closing position, and a horizontally disposed extension on the electro-magnet adapted to engage the movable contact and force it into circuit closing position when the electro-magnets are energized, substantially as described.

17. In apparatus of the class described, the combination of a stationary contact, a spring contact mounted to co-operate therewith and normally biased out of contact therewith, a member located to engage said spring contact to move it into circuit closing position and including an armature, an electro-magnet for moving said member into contact engaging position, contacts normally biased to closed position for controlling the circuit of said electro-magnet, a pivoted member operatively connected to one of said cir-

omit-controlling contacts, a solenoid, and a plunger there-
for, the said plunger being located to impinge upon the free
end of the pivoted member to open said circuit-controlling
contacts when the solenoid is de-energized, substantially
as described.

Invent B. - Claims 5 and 6

4-9-15

Invent C - Claim 1 - new addition

4/12/15

" C - Claim 7 -

4/15/15

This specification signed and witnessed this 14th day of June 1912

Witnesseth:

- Sam G. Langley
1. Henry Lavanah
2. Anna P. Klehm

Oath.

State of New Jersey }
County of Essex } ss.,

SAM G. LANGLEY, the above named
petitioner, being duly sworn, deposes and says that he is a citizen of the United
States, and a resident of West Orange, Essex County, New Jersey

that he verily believes himself to be the original, first and sole inventor of the
improvements in

MEANS FOR CHARGING STORAGE BATTERIES

described and claimed in the annexed specification; that he does not know and
does not believe that the same was ever known or used before his invention or
discovery thereof; or patented or described in any printed publication in the
United States of America or any foreign country before his invention or
discovery thereof, or more than two years prior to this application; or patented
in any country foreign to the United States on an application filed more than
twelve months prior to this application; or in public use or on sale in the
United States for more than two years prior to this application; and that no
application for patent upon said invention has been filed by him or his legal
representatives or assigns in any foreign country.

Sam G. Langley
Sworn to and subscribed before me this 14th day of June 1912

[Seal]

Anna P. Klehm
Notary Public.

704,338

275

2

861

Fig. 3

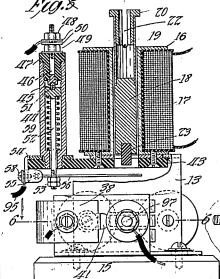


Fig. 3

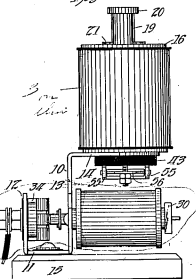


Fig. 4

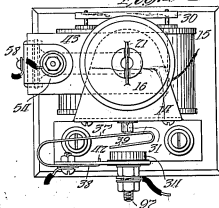
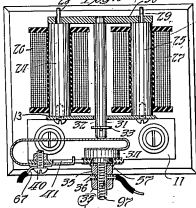


Fig. 5



Witnesses:

Henry L. Latham

Henry L. Latham

Inventor:

Sam. L. Latham

Trans. L. Latham

His Atty

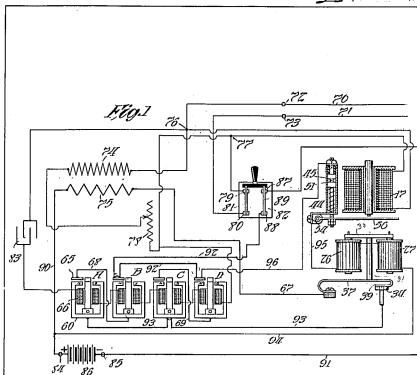


Fig. 2



Witnesses:

John A. Lusk
Henry Lusk

Inventor:

Sam. G. Lusk
by *James C. Lusk*
his atty.

Div. 26, Room 105

Address only
"The Commissioner of Patents,
Washington, D. C."

2-200

V00

Paper No. 2

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON

February 4, 1913.

Sam G. Langley,

Frank L. Dyer,

Orange, N. J.

Please find below a communication from the EXAMINER in charge of your application.
for Means for Charging Storage Batteries, filed June 18, 1912,
Serial No. 704,358.

4-6-2001

E. B. Wilson

Commissioner of Patents.

If applicant's full first name is "Sam", affidavit to that effect should be filed. If that is not his full first name the correct name should be inserted in the preamble to the specification.

The numerals 30 and 31 should be placed on Fig. 1. It is not seen how the current could be supplied from the rectifying system as stated on page 11, line 25, before the switch 37 is closed.

A plurality of inventions are claimed in this application. Claims 1 to 4 are drawn to a system classifiable in 171-Systems, Secondary Battery. Claims 5 to 13 are drawn to an electromagnetic switch for the contacts 51 and 45. This device seems to be independent in its mode of operation from the system and is classifiable in another subclass of this Office. Claims 14 to 17 are drawn to still another electromagnetic switch, which is considered to be an independent device.

Division is required along the lines suggested.



IN THE UNITED STATES PATENT OFFICE

Sam C. Langley
MEANS FOR CHARGING STORAGE
BATTERIES

Room No. 105

Filed June 18, 1912

Serial No. 704,338

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of
February 4, 1913, please amend the above entitled case
as follows:-

Page 11, lines 24 and 25, cancel "or by recti-
fied current supplied from the rectifying system".

Page 12, line 24, after "transformer," insert
the sentence - While the battery is being charged, the
rectifying system co-operates with the battery in supplying
current to the magnet windings 26 and 27. -

Cancel claims 5 to 17 inclusive.

The Examiner is requested to apply in Figure 1
the reference numeral 30 to the armature and the reference
numeral 31 to the member secured at right angles to the
armature.

R E M A R K S

Claims 5 to 17 inclusive have been canceled in
compliance with the Examiner's requirement of division.
Applicant reserves the right to file a divisional applica-

tion or applications on the subject matter of the claims
canceled.

Action on the merits is requested.

Respectfully submitted,

SAM G. LANGLEY

By Frank L. Dyer

His Attorney

Orange, New Jersey

January 3/ , 1914

HL-JS

STATE OF NEW JERSEY)
) SS.:
COUNTY OF ESSEX)

SAM C. LANGLEY, whose application
for Letters Patent for MEANS FOR CHARGING STORAGE BATTERIES,
Serial No. 704,339, was filed in the United States Patent
Office on or about the 18th day of June, 1912, being duly
sworn, deposes and says that his full first name is "Sam".

Sam C. Langley

Sworn to and subscribed before me
this 3rd day of January, 1914

Mary J. Laidlaw

(Seal)

Div. 26 Room 105

Address only
"The Commissioner of Patents,
Washington, D. C.,"
and not any official by name.

2-200

VOC

Form No. 1

All communications respecting this
application should give the serial number,
date of filing, title of invention, and
name of the applicant.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON

April 29, 1914.

Frank L. Dyer,

Orange,

New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

Sam G. Langley, Serial No. 704,338, filed June 18, 1912, for

Means for Charging Storage Batteries.

Thomas Ewing
Commissioner of Patents.

In response to amendment of Feb. 2, 1914.

The numerals "30" and "31" have been applied to Fig. 1 as requested. The numeral "18" should also be applied to this figure.

18 is not
properly
applied
to entire
line

Inasmuch as applicant has elected to claim the system, the figures on sheet 2 should be cancelled, together with their description.

Claim 1 is rejected on Maxim, 742,886, Nov. 3, 1903, Systems, Secondary Battery.

The other claims are allowed.

IN THE UNITED STATES PATENT OFFICE

Sam G. Langley

MEANS FOR CHARGING STORAGE BATTERIES

Filed June 18, 1912

Room No. 105.

Serial No. 704,358

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of April 29, 1914, please amend the above entitled case as follows:-

Claim 1, line 5, before "said" insert - voltage of - .

Add the following claims: -

5. In a system of the class described, the combination of a storage battery and means for supplying unidirectional current thereto, including a source of current, rectifying means, and means for automatically establishing connection between said storage battery and said rectifying means whenever a predetermined electrical condition exists in said source, substantially as described.

6. In a system of the class described, the combination of a storage battery and means for charging the same, including a source of alternating current, rectifying means, and contacts for making and breaking connection between the battery and the rectifying means, said contacts being automatically moved relatively to each other into

circuit making or breaking position according to the electrical condition of said source, substantially as described.

R E M A R K S

The Examiner is requested to withdraw the requirement that the figures on sheet 2 be canceled. These figures aid materially in a clear and ready understanding of the specific system in which the invention is shown as embodied, and contribute to the explanation, required by statute, of the best mode in which applicant has contemplated applying the principle of his invention. The cancellation of these figures would necessitate a considerable revision of the specification and probably amendments to Figure 1 of the drawing, inasmuch as this figure is largely diagrammatic. It is not believed that the reference numeral 18 should be applied to Figure 1, inasmuch as this reference numeral designates merely the lower portion of the core, and in Figure 1 no line of demarcation is shown between the upper and lower portions of the core.

Claim 1 has been amended to distinguish from the patent to Maxim cited, by reciting that the connection-controlling means is controlled by the voltage of the source.

In the patent to Maxim, the under load circuit breakers V and Va are not self-restoring but must be reset by hand, whereas in applicant's system the connection between the storage battery and the rectifying means is automatically established wherever a predetermined electrical condition exists in the source, and the contacts

for making and breaking connection between the battery and the rectifying means are automatically moved relatively to each other into circuit making or breaking position according to the electrical condition of said source. One or the other of these distinctions appears in each of new claims 5 and 6, and these claims are believed to be clearly patentable.

Reconsideration and allowance are requested.

Respectfully submitted,

SAM C. LANGLEY

By Frank L. Ryan

His Attorney

Orange, N. J.

April 9, 1915

HL-JS

Div. 2d Room 105

RM

2-200

CJD

Paper No. 6

Address only
The Commissioner of Patents,
Washington, D. C.,
and not any official by name.

All communications respecting this
application should give the serial number,
date of filing, title of invention, and
name of the applicant.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON June 22, 1915.

Frank L. Dyer,

Orange,

New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

S. G. Langley, filed June 18, 1912, for Means for Charging Storage

Batteries. Ser. No. 704,338.

c 6-2021

Thomas Ewing
Commissioner of Patents. 959,613

In response to amendment filed Apr. 10, 1915.

Claims 1, 5 and 6 are rejected on Scheibe, 959,513, May

31, 1910, Systems, Sec. Bat. or Scheibe, 959,544, May 31, 1910,
Systems, Sec. Bat.

In explanation, it may be stated that the tilt-
ing coils 21 and 23 of the references which serve to establish connec-
tion within the rectifier are thought to be equivalent to means for
establishing connection between the storage battery and rectifying
means.

959,513 should have been cited as 959,613.

Examiner - Division 26.

IN THE UNITED STATES PATENT OFFICE.

Sam C. Langley

MEANS FOR CHARGING STORAGE
BATTERIES

Room No. 105.

Filed June 18, 1912

Serial No. 704,338

Hon. Commissioner of Patents.

S I R :

In response to the Office action of June 22, 1915,
please amend the above entitled case as follows:

Rewrite claim 1 as follows:

C 1. In a system of the class described, the combination of a storage battery and means for supplying unidirectional current thereto, including a source of alternating current, rectifying means, and means controlled by the voltage of said source for connecting said battery to said rectifying means, substantially as described.

Add the following claim:

C 7. In a system of the class described, the combination of a storage battery and means for charging the same, including a source of alternating current, a transformer, rectifying means, a connection between the rectifying means and the battery, a connection between the transformer and the source of current, an automatic switch having a winding supplied with alternating current from the source and having contacts controlled by said winding in the connection between the battery and the rectifying means, and a manually operated switch for simultaneously controlling said connections and the automatic switch winding, substantially as described.

R E M A R K S

The patent to Scheibe was evidently incorrectly cited by the Examiner and should have been cited as No. 959,613. This patent shows a rectifying system in which a mercury vapor rectifier is employed. Mercury vapor rectifying devices cease to operate if the alternating current circuits are broken or if the supply of energy is temporarily interrupted for any cause. Such devices are restarted by tilting the rectifier bulbs and in a system of this kind it is necessary to provide means for retilting the above bulb when the current supply fails, and this is the principal object of the Scheibe patent. In applicant's system, the problem is quite different inasmuch as the type of rectifier used in applicant's system is self-starting, but means must be provided for interrupting the direct current circuit in order to prevent the discharge of the battery through the rectifying devices if their contacts should happen to be in closed position when the devices cease to operate. In applicant's system, means is provided for automatically opening the battery circuit when the alternating current supply fails or falls below a predetermined value. In the Scheibe patent, connection within the rectifier is established, when the bulb is tilted, from the starting terminal 27a through the mercury to the direct current terminal 14. These elements, however, form a necessary part of the rectifying device. The patent to Jackson and Scheibe, No. 959,544, shows a similar system and the discussion of the Scheibe patent applies also to the Jackson and Scheibe patent.

While claim 1 as formerly presented is not believed to be met by either of these patents, the claim has been rewritten in order to distinguish from these

patents more clearly, and in the claim as rewritten there is recited "means controlled by the voltage of said source for connecting said battery to said rectifying means" and the means so described is in addition to the rectifying means. It is believed that this claim distinguishes clearly from the patents discussed above inasmuch as that in these patents there is no element in addition to the rectifying means constituting "means controlled by the voltage of said source for connecting said battery to said rectifying means".

Reconsideration of the rejection of claims 5 and 6 is requested. Claim 5 recites "rectifying means, and means for automatically establishing connection between said storage battery and said rectifying means whenever a predetermined electrical condition exists in said source". The patents discussed above do not show the second mentioned means in addition to rectifying means. Similarly in claim 6 in addition to the rectifying means there are recited "contacts for making and breaking connection between the battery and the rectifying means, said contacts being automatically moved relatively to each other into circuit making or breaking position according to the electrical condition of said source". The Scheibe patents do not show such contacts in addition to the rectifying means.

New claim 7 clearly distinguishes from the Scheibe patents by reciting "a connection between the rectifying means and the battery" and contacts controlled by the automatic switch winding in the connection between the battery and the rectifying means. This claim also distinguishes from the patent to Maxim, previously cited, in setting forth that the automatic switch has a winding supplied with alternating current from the source and has contacts controlled by said winding in the connection between the

battery and the rectifying means, and in reciting a manually operated switch for simultaneously controlling the battery and source of current connections. One advantage of applicant's system is that by opening the manually operated switch the rectifying apparatus is simultaneously disconnected from the outside source and the battery, and since the break in the direct current circuit occurs at the manually operated switch before it occurs at the contacts of the automatic switch, there is no sparking at the contacts of the automatic switch and these contacts are therefore protected. See page 12 of the specification, lines 23 to 26 inclusive.

The claims now presented are believed to be patentable, and reconsideration and allowance are requested.

Respectfully submitted,

SAM G. LANGFRY

By Frank L. Lyon

His Attorney

Orange, N. J.

June 15, 1916

HL

IN THE UNITED STATES PATENT OFFICE

Sam G. Langley

MEANS FOR CHARGING STORAGE
BATTERIES

AMENDMENT UNDER RULE
78.

Filed June 18, 1912

Serial No. 704,338

Allowed July 22, 1916

HONORABLE COMMISSIONER OF PATENTS.

S I R :

Please amend the above entitled case
under Rule 78 without withdrawing the same from issue, as
follows:-

Insert the following paragraph at the end of

page 1: -

My copending applications Serial No. 136,781,
filed December 13, 1916, and Serial No. 136,782, filed
December 13, 1916, are divisions hereof and contain claims
covering the automatic switch device. -

Page 4, line 25, cancel "is".

Page 8, line 5, change "55" to - 54 - .

R E M A R K S

The Examiner is respectfully requested to change
the reference character 35 applied to the outer nut on rod
97 in Figure 6 of the drawings to 35'.

The present amendment is made merely for the pur-
poses of correcting certain informalities and for making

reference to two divisional applications. It is accordingly requested that the Examiner recommend the admission of this amendment.

Respectfully submitted,

SAM G. LANGLEY

By Frank L. Dyer

His Attorney

Orange, N. J.

December 24, 1916

WH-JS

AH

2-181

Serial No. 704,338

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON July 22, 1916

Sam. G. Langley, Assor,

Sir: Your APPLICATION for a patent for an IMPROVEMENT in

Means for Charging Storage Batteries,

filed June, 18, 1912, has been examined and ALLOWED.

The final fee, TWENTY DOLLARS, must be paid not later than SIX MONTHS from the date of this present notice of allowance. If the final fee be not paid within that period, the patent on this application will be withheld, unless renewed with an additional fee of \$15, under the provisions of Section 4897, Revised Statutes.

The office delivers patents upon the day of their date, and on which their term begins to run. The printing, photolithographing, and engrossing of the several patent parts, preparatory to final signing and sealing, will require about four weeks, and such work will not be undertaken until after payment of the necessary fee.

When you send the final fee you will also send, DISTINCTLY AND PLAINLY WRITTEN, the name of the INVENTOR, TITLE OF INVENTION, AND SERIAL NUMBER AS ABOVE GIVEN, DATE OF ALLOWANCE (which is the date of this circular), DATE OF FILING, and, if assigned, the NAMES OF THE ASSIGNEES.

If you desire to have the patent issue to ASSIGNEES, an assignment containing a REQUEST to that effect, together with the FEE for recording the same, must be filed in this office on or before the date of payment of final fee.

After issue of the patent uncertified copies of the drawings and specifications may be purchased at the price of FIVE CENTS EACH. The money should accompany the order. Postage stamps will not be received.

Final fees will NOT be received from other than the applicant, his assignee or attorney, or a party in interest as shown by the records of the Patent Office.

Respectfully,

Thomas Ewing
Commissioner of Patents.

Frank L. Dyer.

Orange,

New Jersey.

IN REMITTING THE FINAL FEE GIVE THE SERIAL NUMBER AT THE HEAD OF THIS NOTICE.

UNCERTIFIED COPIES WILL NOT BE ACCEPTED.

DEPARTMENT OF THE INTERIOR.

United States Patent Office.

In re application,
Sam G. Langley,
"Means for Charging
Storage Batteries,"
Filed June 18, 1912,
Serial No. 704,538.

Before the
Hon. Commissioner of Patents.
On Petition.

Examiner's Statement.



It is recommended that the petition to amend the above
entitled application under Rule 78 be granted, but that the
serial number given as "136,781" in line 2 of the amendment
which it is proposed to insert at the end of page 1 be changed
to 136,782 by examiner's amendment, before entry of the proposed
amendment.

Respectfully submitted,

Examiner, Division 26.

Washington, D. C.,

January 4, 1917.

ADDRESSEE ONLY
THE COMMISSIONER OF PATENTS
WASHINGTON, D. C.

2-653

Letter No.

REG

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

January 6, 1917.

In the matter of the	}	
Application of	}	
Sam G. Langley	}	
Means for Charging Storage	}	Amendment.
Batteries;	}	
Filed June 18, 1912	}	
Serial No. 704,338.	}	

Sir:

You are hereby informed that the recommendation of the examiner that the amendment be admitted under the provisions of Rule 76, a copy of which was mailed to you under date of the 14th instant, has been approved by the First Assistant Commissioner and the amendment entered.

By direction of the Commissioner:

Very respectfully,

Chief Clerk.

P.

Sam G. Langley
c/o Frank L. Dyer,
Orange, N.J.

Folio _____

STATEMENT OF INVENTOR

Invention Automatic No-voltage Release
Conceived on Feb 2, 1912 Made sketches on Feb 3, 12
Disclosed to Chas. Stelly Date Feb 3, 1912
" O. M. Bliss " Feb 5, 1912
Made drawing detail drawings on file in the Finished on March 12
Patent Dept.
Model or complete working device started Feb 6, 1912
Finished on Feb 13, 1912
Is the invention in use? Yes

General Description of
Invention.

S. G. Langley
June 8, 1912

*A solenoid connected to main line through
a switch closed carrying charging current to a storage
battery. When voltage falls, circuit to battery
is opened, automatically closing again when
main line voltage is re-established.*

Received by _____ Date _____

Inventor _____

Remarks _____

Note: This statement, together with sketch, to be put in the
application file.

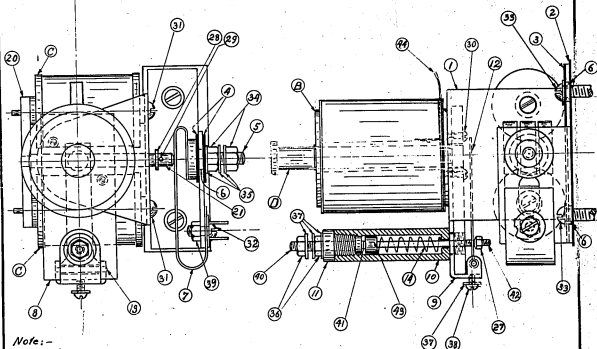
NAME
SOLENOID TYPE AUTO. SWITCH FOR B-4 RECTIFIER

SUPERSEDES No. _____
SUPERSEDED BY No. _____

DRAWING
PART
PATTERN
No.

A
761

MATERIAL _____ SIZE OF STOCK FOR ONE _____ QUANTITY OF STOCK FOR 100 — 500 — 1000 _____



Note:—
Solenoid Spool to be
soldered to Frame

WHERE USED

UNIT
No.

QUANTITY
FOR ONE

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

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38

39

40

CORRECTIONS

DRAWN BY _____
TRACED BY _____

CHECKED BY _____
APPROVED BY _____

ORANGE, N. J.

DATE *Apr 24 1962*

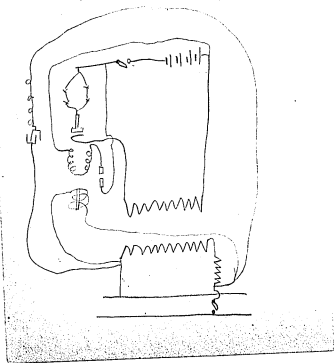
5

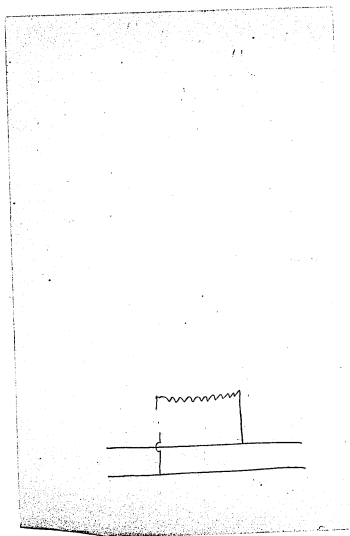
[ON BACK OF PREVIOUS DOCUMENT]

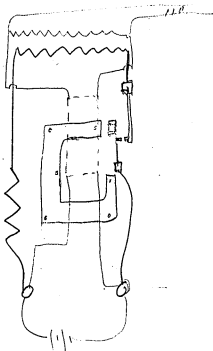
In case of blow out or break in line
the circuit is broken

This is to prevent discharge from battery through rectifiers
secondary, and unit etc, there might be arcing, burning,
rectifier lead battery, or loose to arcing battery, ground

sec 207, 124 - No. 2 -
Syst Battery -







Wagner system

DRAWING
No. A

DRAWN BY J. J. J. CHECKED BY _____
TRACED BY _____ APPROVED BY _____
ORANGE, N. J.

REMARKS

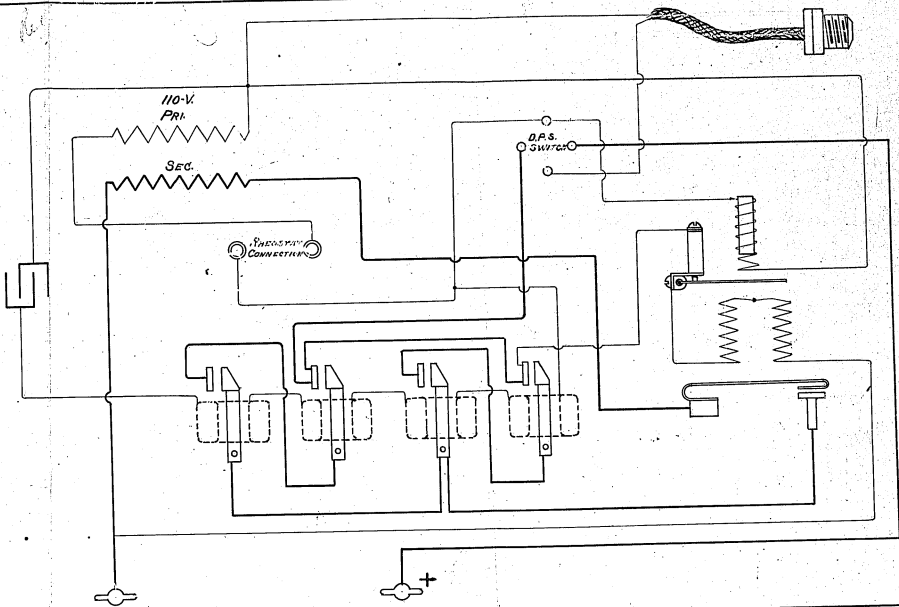
NAME _____

WHERE USED	MODEL	TYPE	PIECE NO.	SIZE OF STOCK

MATERIAL	
-----------------	--

MATERIAL

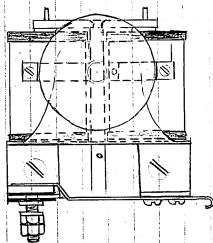
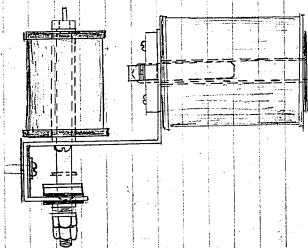
GRADE	PAT. NO.	FINISH
		Feet



CORRECTIONS

1	3	5	7	9
2	4	6	8	10

Duplicate of sketch made Feb 5th 1912
This duplicate sketch made June 6, 1912
S. E. Kinsinger.



F861

March 12, 1913

Conference with Mr. Langley on Vibrating Type
of Alternating Current Rectifier.

Was informed for the first time that the armatures
employed in the type of rectifier now put out consist each
of two parts riveted together. An armature consisting of
two parts capable of independent vibration is not employed

H. L.

See Am Langley

*Constitutes =
What do you say about
last paragraph of this
letter marked
October 10, 1916*

Mr. Edison:-

FOLIO 861 - application of Sam G. Langley for
Means for Charging Storage Batteries

This application covers a system and apparatus for disconnecting the rectifying devices from the battery when the alternating current fails or falls below predetermined value and for reconnecting the same when the current increases to a predetermined value. The application was filed with claims for the system and also claims for the specific magnetic switches used in the system. Division was required and we elected to retain the claims covering the system. The application has now been allowed with very good claims covering the system - see for example the following claims:-

1. In a system of the class described, the combination of a storage battery and means for supplying unidirectional current thereto, including a source of alternating current, rectifying means, and means controlled by the voltage of said source for connecting said battery to said rectifying means, substantially as described.

5. In a system of the class described, the combination of a storage battery and means for supplying unidirectional current thereto, including a source of current, rectifying means, and means for automatically establishing connection between said storage battery and said rectifying means whenever a predetermined electrical condition exists in said source, substantially as described.

6. In a system of the class described, the combination of a storage battery and means for charging the same, including a source of alternating current, rectifying means, and contacts for making and breaking connection between the battery and the rectifying means, said contacts being automatically moved relatively to each other into circuit making or breaking position according to the electrical condition of said source, substantially as described.

Yes - H

I presume you will wish this patent taken out.

In this system there is employed a relay switch and a main-switch, both mounted ~~on~~ the same ^{frame} ~~way~~. The Patent Office considers these switches as separate inventions and to secure protection on the same we would probably have to file two applications, one for each switch. Do you wish these applications filed? I understand that this apparatus is still used.

HL-JS

Henry Lavalan

Constable Hawabouthi

E

Copy

October 10, 1916

Mr. Edison:-

FOLIO 861 - application of Sam G. Langley for
Means for Charging Storage Batteries

This application covers a system and apparatus for disconnecting the rectifying devices from the battery when the alternating current falls or falls below predetermined value and for reconnecting the same when the current increases to a predetermined value. The application was filed with claims for the system and also claims for the specific magnetic switches used in the system. Division was required and we elected to retain the claims covering the system. The application has now been allowed with very good claims covering the system - see for example the following claims:-

1. In a system of the class described, the combination of a storage battery and means for supplying unidirectional current thereto, including a source of alternating current, rectifying means, and means controlled by the voltage of said source for connecting said battery to said rectifying means, substantially as described.

5. In a system of the class described, the combination of a storage battery and means for supplying unidirectional current thereto, including a source of current, rectifying means, and means for automatically establishing connection between said storage battery and said rectifying means whenever a predetermined electrical condition exists in said source, substantially as described.

6. In a system of the class described, the combination of a storage battery and means for charging the same, including a source of alternating current, rectifying means, and contacts for making and breaking connection between the battery and the rectifying means, said contacts being automatically moved relatively to each other into circuit making or breaking position according to the electrical condition of said source, substantially as described.

Yus. T.
X
Yus

I presume you will wish this patent taken out.

In this system there is employed a relay switch and a main switch, both mounted on the same frame. The Patent Office considers these switches as separate inventions and to secure protection on the same we would probably have to file two applications, one for each switch. Do you wish these applications filed? I understand that this apparatus is still used.

(Signed) Henry Lanahan

Mr. Meadowcroft:-

Herewith copy of memorandum which was sent on October 16, 1916 to Mr. Edison with application Folio 861. I have made inquiries at this end, but have been unable to learn anything about the original memorandum and the folio which accompanied it. Our office boy remembers taking several papers over to the Laboratory last week but does not remember anything about this particular one.

Mr Edison
So far as I know
these papers were sent
to you in your mail. J. E. Stalker
One thing at your
house? Meadows

Mr. Lincoln

See note on 2nd sheet

I returned marked a duplicate
of this letter dated
October 16, 1916
your copy must
have reached it

October 19th, 1916.

Mr. Edison:

Danahan go ahead Tag

In answer to your memo of October 10th regarding the advisability of taking out patent applications on the Relay and Main Switch used on the Rectifier, I would advise that those points be thoroughly protected. Of course the rectifier at the present time is a comparatively small proposition, but I understand from Mr. Langley that the other Companies making such devices are covering every point of construction possible by patents and apparently there is a feeling that a similar rectifier will have an increase demand in the near future.

The Edison rectifier has certain very marked advantages over anything on the market so far, and I believe it would be good policy to cover these two points of construction as a safety measure.

The switch and relay referred to are of rather novel construction and there is a possibility of this construction being valuable in the future.

JPC:MSH

John F. Constable,
John
CHIEF ENGINEER.

Revised under Rule 78
referred to divisional application.

Mr. Lanchester

Folio 861

Sam G. Langley
Means for Charging Storage Batteries
Serial No. 704,338
Filed June 18, 1912
Allowed July 22, 1916
Final Fee Due Jan. 22, 1917.

Mr. Holden:

Any divisional application? *yes -*
Any foreign applications? *no*

This application has been assigned to Thomas A. Edison,
Inc. Should it be assigned to *him*, to whom? *N. T. Patent Co.*

When do you wish final fee paid? *As soon as divisional
applications have been filed.*

J. UNGER

Patent Series
Patent Application Files

Folio # 860 Production of Sound-Records

U.S. Patent #: 1282011

Primary Applicant: Aylsworth, Jonas W

Date Executed: 6/17/1912

Allen Thompson -

Method of making mold.

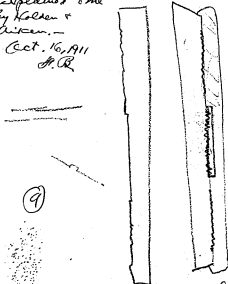
Explains to me
by Helen +
Allen -

Oct. 16, 1911
A.R.

for
making
character
type.

for
making
character
type.

0000
0000
0000
0000



Phone Record having
an embossed half tone label.
half tone label surface.

MEMORANDUM

District

Date

Photo engraving is a process
 very different from
~~photo~~ plate
 or conductive layer
 on conductive such as
 graphite
 in position

Etch, plate in Cu bath
 to about .01" thick

cut out

+ stick upon

Submaster with
 Beechwood resin
 or wax like adhesive
 coated on label
 laid on master

Use master whole (master whole)
 to deep groove 100
 below No 07.

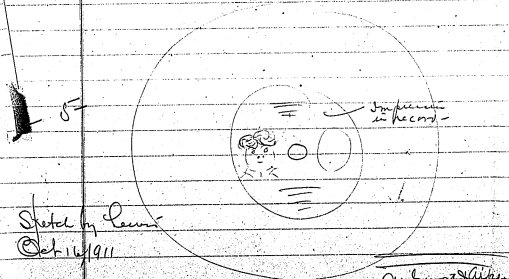
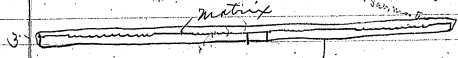
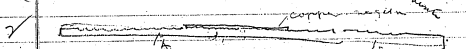
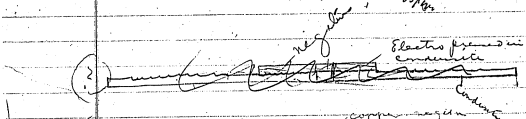
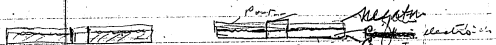
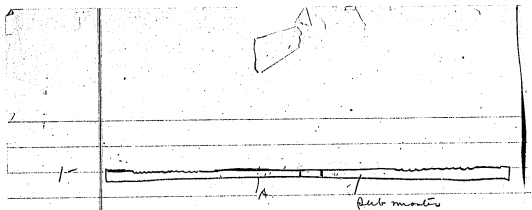
MEMORANDUM

District

Date

Plate mold
 in master etc

Photo Engraved
 plate



Sketch by Lewis
Oct. 16, 1911

By Lewis

File
7,868

JUL 1 - 1912

Legal Dept

Have we patented new
New Label + method in
Center of new disc —

also the limitation of a book to hold

~~Office Records~~
~~that~~
~~have been~~

also Dolbear's book to
hold cylinder records

2

Application filed
in P. O.

Patent Series

Patent Application Files

Folio # 866 Process of Making Screens for Projection

U.S. Patent #: 1266778

Primary Applicant: Edison, Thomas A

Date Executed: 6/19/1912

Received June 14, 1912
H.S.

June 12 1912

Legal Dept

Application for a screen for
Moving Pictures

Regular Smooth Oil cloth,

This is heated when it
becomes sticky, the bronzing
powder is then applied while
the Lunsed film is hot & sticky.
The whole surface gets coated
& the particles are strongly
held after the cloth cools -
& does not come off by rolling
up or rough handling.
get particulars from
Dally as the best
compositions of Bronze powder
used

refined linseed oil -

tong oil or Chinese wood
oil -

drying oil -

dried horse oil 1

(5g aluminum bronze -
3gr amethyst violet bronze powder -
rubbing it in

ordinary white oil cloth -

Heat the oil cloth - (steam at 100 lbs pressure)

Apply powder sparingly with brushes, so
to rub powder into softened coating of
oil cloth -

permit treated oil cloth to cool -

spray with linseed oil, preferably boiled,
mixed with driers and turpentine

(Japan drier (white)
very light color

fully spraying keeps powder from rubbing
off or leaving finger marked, and keeps
the bronze from tarnishing, also produces
screen being somewhat dull or matt surface -

may be commingled

Mr. Charles Edison

*Charles Edison is
a clerk in
George Washington's
but if it cost
only a few
hundred to
take out pat.
they will
allow it
might
be some value
as the case
is a copy of
the article*

Mr. Edison:

APPLICATION FOR PATENT

October 19, 1917

I hand you herewith our copies of the papers in
your application Serial No. 705,648 filed June 24, 1912 en-
titled SCREENS FOR PROJECTION AND PROCESS OF MAKING THE SAME.

This application relates to a motion picture screen
made from ordinary oilcloth by slightly heating the oilcloth to
render the surface thereof tacky and applying thereto a substi-
tuting coating of powdered aluminum or powdered aluminum and pow-
dered bronze, and applying to the latter coating a protective
coating of ^{dried} drying oil such as a mixture of linseed oil, turpen-
tine and white japan drier.

All the claims now in the application relating to
the process of making the screen, seven in number, have been
allowed, of which the following will serve as an example:

5. The process of making screens for projection pur-
poses, which consists in heating oilcloth until the oilcloth
surface becomes soft and somewhat sticky, applying powdered
material containing a metal to the softened and sticky sur-
face, and rubbing the said material into the surface, substantially
as described.

All the claims, six in number, relating to the
article, however, have been finally rejected on U.S. patent
to Price No. 995,289 dated June 13, 1911, and French patent
to Fey No. 388,978, copies of which patents are attached
hereto. The following will serve as an example of the
article claims:

*10/26/17- Mr. Charles Edison says
"I am not familiar with all the
articles"*

/ A screen for projection purposes, consisting of oilcloth having metallic material adhering to the oilcloth coating to produce a partially reflecting surface, said surface having a thin coating of drying oil dried thereon, substantially as described.

Kindly advise whether or not you wish an appeal taken in this application on the article claims.

In case you do not wish an appeal taken will you please advise whether you wish the patent taken out with the process claims, or the application abandoned.

I understand that the screen described in this application is of no commercial value to us at the present time.

Wm. A. Hardy.

WH-EH

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This edition was made possible by grant funds provided from the New Jersey Historical Commission, National Historical Publications and Records Commission, and The National Endowment for the Humanities. Major underwriting has been provided by the Barkley Fund, through the National Trust for the Humanities, and by The Charles Edison Foundation.

We are grateful for the generous support of the IEEE Foundation, the Hyde & Watson Foundation, the Martinson Family Foundation, and the GE Foundation. We acknowledge gifts from many other individuals, as well as an anonymous donor; the Association of Edison Illuminating Companies; and the Edison Electric Institute. For the assistance of all these organizations and individuals, as well as for the indispensable aid of archivists, librarians, scholars, and collectors, the editors are most grateful.

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Rutgers, The State University of New Jersey
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The original documents in this edition are from the archives at the Edison National Historic Site at West Orange, New Jersey.

ISBN 978-0-88692-887-2

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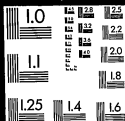
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